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THESIS

THE MODERNIZATION OF THE CHINESE PEOPLE'S LIBERATION ARMY: GOALS AND PROBLEMS

by

Philip Shing-Hwa Yang

June 1980

Thesis Advisor: Claude A. Buss

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T196583

Unclassified

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER

2. GOVT ACCESSION NO.

3. RECIPIENT'S CATALOG NUMBER

4. TITLE (and Subtitle)

The Modernization of the Chinese People's Liberation Army: Goals and Problems

5. TYPE OF REPORT & PERIOD COVERED

Master's Thesis
June 1980

6. PERFORMING ORG. REPORT NUMBER

7. AUTHOR(s)

Philip Shing-Hwa Yang

8. CONTRACT OR GRANT NUMBER(s)

9. PERFORMING ORGANIZATION NAME AND ADDRESS

Naval Postgraduate School
Monterey, California 93940

10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS

11. CONTROLLING OFFICE NAME AND ADDRESS

Naval Postgraduate School
Monterey, California 93940

12. REPORT DATE

June 1980

13. NUMBER OF PAGES

135

14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office)

Naval Postgraduate School
Monterey, California 93940

15. SECURITY CLASS. (of this report)

Unclassified

15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release; distribution unlimited.

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

People's Republic of China; the Four Modernizations; modernization of the Chinese People's Liberation Army; economy, science and technology; Sino-American relations: U. S. arms transfer policy toward the PRC.

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This thesis focuses on the modernization of the Chinese armed forces in the much publicized "Four Modernizations" currently underway in China. The composition, capabilities and vulnerabilities of the People's Liberation Army - the collective name for the armed forces of the People's Republic of China - are identified, and the political, technological and economic phenomena which will influence the military modernization

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE
S/N 0102-014-6601

Unclassified

20. (continued) effort are analyzed.

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by

Philip Shing-Hwa Yang
Captain, United States Army
B. A., Arizona University, 1973

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF ARTS IN NATIONAL SECURITY AFFAIRS

from the

NAVAL POSTGRADUATE SCHOOL
June 1980

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ABSTRACT

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I. CHINA: RESTORATION IN A NEW ERA

A. HISTORY IN RETROSPECT

China has seen a series of modernization attempts during the last turbulent century. Whether it was the "Hundred Day Reform" of 1898, the "Great Leap Forward" of 1958, or the latest reform effort of the "Four Modernizations", advocates of different policies have had their say, risen, and fallen. In the late 1950s, the PRC Minister of Defense, Marshall Peng Dehuai, was principal advocate of modernizing China's armed forces. His advocacy of military modernization and his criticism of Mao Zedong's "Great Leap Policy" led to his dismissal in 1959. The effect of his being purged was that attempts to modernize the armed forces were dealt a blow from which it took the advocates a long time to recover. It was not until 1975, a new direction of modernization emerged with a speech by Zhou Enlai at the Fourth People's Congress. Zhou revealed his two-stage modernization scheme. The first stage was designed to build an independent and relatively comprehensive industrially oriented economic system before 1980, and the second stage was to accomplish the modernization of agriculture, industry, national defense,

and science and technology so that China would be marching in the front ranks of the world by the year 2000.[1]

B. NATIONAL OBJECTIVE - THE FOUR MODERNIZATIONS

The death of Zhou and Mao in 1976 brought a brief power struggle which produced the downfall of the "Gang of Four," a radical left-wing group led by Mao's wife, Jiang Qing, and the ascendancy of the moderates Hua Guofeng and Deng Xiaping. Like the leaders in most large nations, Beijing leaders are determined to achieve self-reliance, national power, economic prosperity, and international recognition.

On 26 February 1978, Premier Hua Guofeng presented the "Ten Year Plan for the Development of the National Economy 1967-1985," endorsed by the First Session of the Fifth National People's Congress of March 5, 1978.[2] This was basically the same two-stage plan sponsored by Zhou in 1975. The Beijing government's objective was to turn China into a powerful socialist nation by the end of the century through the four modernizations.

The much publicized national objective was outlined in Vice Chairman Ye Jianying's speech at the meeting celebrating the 30th Anniversary of the Founding of the People's Republic of China in 1979:

1. The realization of the four modernizations means gradually turning China's agriculture into a

developed agricultural system with a rational distribution and all-around development of farming, forestry, animal husbandry, side-line occupations and fisheries meeting the needs of the people and of an expanding industry. It means enabling the rural areas gradually to grow into rich bases combining agriculture, industry and commerce.

2. It means gradually turning our industry into an advanced industrial system which is complete in range and rational in structure and which meets the needs of consumers and the expansion of the whole economy. It means that China will gradually take its place in the front ranks of the world in terms of gross national product and output of major products.

3. It means enabling China's science and technology to approach or catch up with advanced world levels. It means that our people will enjoy stable and gradual improvement in their material and cultural well-being as production increases.

4. It means that China will raise her national defense capabilities concomitantly with her economic security and resist and defeat foreign aggressors in case of a modern war.[3]

The new leadership in Beijing capitalized on Zhou's program - which gave legitimacy and authority to its programs for broad based modernization - and headed China into a new era of restoration and modernization.

The plan envisions a steel output of 60 million tons by 1985, almost double the 31 million tons produced in 1978; production of 500 million tons of crude oil by 1985, a figure almost five times the actual output of 1978; production of coal with a targeted rate of more than one billion tons per year, which doubles the coal production of 1978.[4] This ambitious plan brought a new direction

and dimension to the Beijing government after years of economic unrest during the Cultural Revolution.

C. MILITARY MODERNIZATION

All these events easily lead one to presume that under the new leadership of Hua and Deng, military modernization will soon follow, now that Beijing leaders are cognizant of the needs that China has to be marching in the front ranks of the world by the year 2000. In addition, shifts in the power structure in the outside world - marked especially by the deepening rift between China and the USSR and the growing detente between China on the one hand and the U. S. and Japan on the other - not only accentuated China's sense of military helplessness but opened new possibilities of sources and methods whereby China might be able to take measures which would gradually tend to reduce the gap between the strength of China and that of its potential adversaries.

From 1950 to 1970, Beijing regarded the U. S. as its principal adversary. However, with the Soviet invasion of Czechoslovakia in 1968, the Sino-Soviet border clashes the following years, and the debacle of the United States in Vietnam, Chinese threat perceptions underwent a drastic change. Beijing's old number one ally had become its new principal military adversary.

This threat perception is written into the mission statement of the Chinese armed forces, under Article 19 of the present constitution of the People's Republic of China, adopted on 5 March 1978:

> The fundamental task of the armed forces of the People's Republic of China is: To safeguard the socialist revolution and socialist construction, to defend the sovereignty, territorial integrity and security of the state, and to guard against subversion and aggression by social-imperialism, imperialism and their lackey.[5]

The term social-imperialism was obviously aimed at the Soviet Union. This fear of Soviet social-imperialism was well illustrated during Harold Brown's recent visit to China, when Vice Premier Deng Xiaoping said:

> The Soviet Union is the mainsource of a turbulent international situation and a threat to peace and security. China and the United States should do something in a down-to-earth way to defend world peace against Soviet hegemonism.[6]

These two factors, the advent of a new adminstration in China and the changing threat perception in the external world gave rise to the current drive for military modernization.

FOOTNOTES

1. Beijing Review, No. 40, 5 October 1979, p. 15.
2. Beijing Review, No. 10, 10 March 1978, pp. 18-26.
3. Beijing Review, No. 40, 5 October 1979. pp. 22-23.
4. Chu-Yuan Cheng, Modernization of China's Industry: Program, Problems and Prospects (A paper presented to the thirty-first annual meeting of the Association for Asia Studies, 30 March 1979, Los Angeles), pp. 2-3.
5. The Constitution of the People's Republic of China (Beijing: Foreign Languages Press, 1978), p. 16.
6. New York News, 9 January 1980.

II. PRESENT STATUS OF THE PEOPLE'S LIBERATION ARMY: A COMPARISON

With the new administration in office and changes in the threat perception, Beijing leaders began sending military missions abroad to "browse" at the Western weapons and technologies at an unprecedented scale. However, it order to understand what they are "browsing" for, and for what purpose, one must first determine the present status of the PLA. This study will attempt to analyze the present level of equipment and technology of the PLA in comparison with that of its main rival, the Soviet armed forces. The results of this study will then be used as a base to determine what the PLA has to do to achieve its modernization objectives. This study will entail all three services and the strategic force, in order to determine the total efforts needed in the force modernization program.

A. ARMY

Mao Zedong once said: "Political power grows out of the barrel of a gun . . . Yet, having guns, we can create school, create culture, create mass movements. . ." He further pointed out that, "the army is the chief component

of state power; whoever wants to seize and retain state power must have a strong army . . ."[1] However, in spite of its important role in Chinese politics, the army has not developed into a powerful modern force. The army is basically infantry-heavy, lacks the means for tactical and strategic mobility that characterize modern armies. The army, with between 3.5 million and 3.6 million soldiers[2] under arms - the largest army in the world. It is organized and deployed to 11 military regions and divided into main and local forces.

The main forces are those regular army troops under the strategic command of the Ministry of National Defense but administered by the military region in which they are stationed. Main force units intended to be availiable whenever necessary for operations anywhere in China are better equipped.[3] They consist of between 115 and 121 infantry divisions, 11 armored divisions, 40 artillery divisions, (including anti-aircraft divisions) 3 airborne divisions and 150 independent regiments, as compared to the 1.8 million-man army of the Soviet Union, with 118 motor rifle divisions, 48 armored divisions and 8 airborne divisions.[4]

The local forces, also known as regional forces, are those regular troops of the army stationed in and assigned the task of defending a particular geographic area of

China in cooperation with para-military units.[5] The local forces are normally under the command of the headquarters of the military region in which they are stationed. They consist of between 70 and 85 infantry divisions and 130 independent regiments.[6]

Over the years, Chinese planners have made a virtue of necessity by stressing large numbers to compensate for the obsolescence and deficiencies of weapons. The weapons systems currently employed by the army are mainly products or improvements of the outmoded technology of the late 1950s and early 1960s.

1. Infantry

Due to the vastness of the country and the doctrine of the People's War, the ground forces of the PLA are basically infantry oriented. Unlike the 118 divisions of the Soviet's motorized rifle troops, the Chinese infantry lacks the highly effective and mobile force that is essential in the modern battle field.

The Chinese infantry soldier is thought to be highly motivated, physically fit, well disciplined, and well trained in basic skills and small unit action.[7] However, the numerically superior forces of the infantry is hindered by the technologically inferior weapons in the existing inventory, especially the outdated anti-armored

capability. There have been reports of the Chinese acquisition of Soviet Sagger wire-guided anti-tank missiles from Egypt,[8] and captured Saggers from the Vietnamese during the recent border conflict.[9] If this is the case, these Saggers may be used as a model to be copied in a program to booster China's anti-tank capability.

In a recent article appearing in Liberation Army News, numerous PLA soldiers demonstrated the skill in firing the guided anti-tank missile in a live fire exercise. The missiles fired were identified as the Soviet Saggers or reproductions of it.[10]

At present, there is no indication these anti-tank guided weapons are in the Chinese anti-tank forces' inventory. The current army's anti-tank capabilities are limited to the 40mm anti-tank grenade launchers - modified copy of the Soviet RPG-7 with a maximum effective range of 500 meters available at company level; 57/75mm recoilless rifles with a maximum effective range of 640 meters could be found at battalion level; 75/82mm recoilless rifles with a maximum effective range of 640 meters are located at regimental level; and 57/85mm anti-tank guns with a maximum effective range of 1,150 meters at higher level.[11]

Due to limited ranges, these existing Chinese anti-tank forces can easily be covered by enemy light and heavy

machinegun fires, needless to say, easily outgunned by any known tanks today.

On the other hand, the Soviet armies have been reequipped with such new weapons as T-72 tanks, BMP infantry fighting vehicles of which some are mounted with Sagger anti-tank wire-guided missiles with a maximum effective range of 3,000 meters, and M-1974 type 122mm self-propelled gun,[12] with stress of firepower, assaulting capability and high mobility of the troops.

As to the overall effectiveness of the Chinese anti-tank forces compared to that of the Soviets, the Chinese are years behind in technology; it lacks the long range capability; nonavailability of medium and long-range anti-tank weapons at lower echelon level; and lacks the portability and maneuverability in employment.

2. Armored Forces

The Chinese armored forces are no match for the "strike forces" of the Soviets, both quantitative and qualitative. With 50,000 tanks in the 47 tank divisions, the Soviets have the single most modern and largest tank force in the world today, although a significant proportion of these are older models and are considered to be in reserve.[13]

The Chinese main forces armaments consist of some 10,000 tanks, including the Chinese-made Type 59 medium,

Type 62 light, Type 63 amphibious tanks, and 3,500 Chinese designed armored personnel carriers[14] (APC) similar to the American M113 APC. Take the case of the Chinese main battle tank itself. The T-59 could not cope on a one-to-one basis with Soviet T-62s or T-72s. It is believed that the T-59 still lacks the power traverse system, infra-red equipment, rangefinder, and gun stabilizer needed for the quick kill essential in modern armored warfare; lacks adequate armor and mobility that is essential to its survivability, and the lack of firepower to insure its maximum punishment capability.[15] The Chinese Type-63 Amphibious Tank is an upgunned and enlarged version of the Soviet PT-76 amphibious light tank. It has the armor thickness equivalent to the American M113 APC.[16] This means the tank is vulnerable to heavy machinegun fire. According to some observers, China now has plans to upgrade this force, by phasing out approximately 8,000 outdated tanks.[17] This initial acquisition costs of the new tanks and modernization of T-59s are estimated on the order of between 5 and 7 billion dollars.[18]

3. Artillery

The army's artillery includes between 16,000 and 18,000 field guns and howitzers (122mm, 130mm, 152mm) and a small number of self-propelled artillery (SU-76, SU-85, SU-100 and ISU-122).[19] Although some of these artillery

are self-propelled, however, their potential effectiveness is impaired because of their limited mobility and the lack of modern range-finding and sighting devices.[20]

Unlike their Soviet counterpart, the Chinese government has not announced or made known their tactical nuclear capability. Thus, if one exists, Beijing has not propagandized the fact in order to achieve the full deterrent effect. Fighter aircraft, however, could be used for tactical delivery.[21] Thus, the PLA can achieve a limited deterrent effect on the tactical battlefield.

The army's air defense artillery includes some 10,000 anti-aircraft guns of various calibers (14.5mm, 37mm, 57mm, 85mm, 100mm).[22] These weapon systems, however, consist primarily of older Soviet technology which probably would have a limited effectiveness against a modern air force with supersonic aircraft. In addition, these anti-aircraft systems are located at division and anti-aircraft artillery division level.[23] Other anti-aircraft weapon systems include about 100 CSA-1 (SA-2) surface-to-air missiles under the control of the Air Force.[24] These too are outdated Soviet technology of the late 1950s and early 1960s. The SA-2 defense system could be dealt with by on-board electronic countermeasures against the radar.

Again, the Chinese are far behind the Soviets in the areas of field artillery and air defense artillery both

in quality and quantity. With 20,000 artillery and 9,000 air defense artillery pieces, 1,300 rocket launchers with tactical-nuclear capability, 10,000 fixed surface-to-air missile sites, and an unspecified number of mobile surface-to-air missiles ranging from SA-4 Ganef to the most sophisticated SA-11 missiles,[25] the Soviets represent an awesome adversary to the Chinese military.

The great disparty that exists between Soviet and Chinese forces magnifies to an even higher degree when one considers the Chinese do not have any short-range battlefield anti-aircraft missiles such as the Soviet's SA-7 (low altitude, shoulder fired, heat seeking) missile, or the medium range, Roland Class anti-aircraft missile. (See Table II-1)

B. AIR FORCE

Since the initial organization of the PLA Air Force in 1949, it has emerged from a basically "leftover" and "skeletoned" Air Force - captured aircraft from Japanese remnants in Manchuria and the retreating Nationalist troops after the liberation - to one with over 4,700 combat aircraft in the current tactical Air Force inventory. Though the aircraft industry is steadily being modernized, it is years behind that of the Soviet Union and United States. It was reported that most of the jet fighters are still armed only

TABLE II - I

CHINESE ARMY	SOVIET ARMY
I. STRENGTH: 3,600,000 MAIN FORCES: 115 Inf Divs, 11 Armor Divs, 40 Arty Divs, 16 Railing Divs, 150 Independent Regts. LOCAL FORCES: 85 Inf Divs, 130 Independent Regts.	I. STRENGTH: 1,825,000 118 Motorized Rifle Divs 47 Tank Divs 6 Airborne Divs
II. EQUIPMENT	II. EQUIPMENT
A. TANKS: 11,000 Soviet IS-2, T-34 and Chinese produced Type-59 Medium, Type 62 Light	A. TANKS: 50,000 IS-2/3, T-10, T-54, T-55, T-64, T-72 Medium, PT-76 Light
B. ARMORED FIGHTING VEH. 1,500 M-1967 Armored Personnel Carriers	B. ARMORED FIGHTING VEH. 55,000 BRDM Scout Cars, BMP Infantry Fighting Vehicles, BTR-40, BTR-50, BTR-60, BTR-152, BMD Armored Personnel Carrier
C. ARTILLERY: 16,000 122mm, 130mm, 152mm, field guns/howitzers, SU-76, SU-85, SU-100, ISU-122 Self-propelled Artillery 32,000 82mm, 120mm, 160mm mortars, 107mm, 140mm Rocket Launchers, 57mm, 75mm, 82mm Recoilless Rifles, 57mm, 76mm, 85mm, 100mm Anti-tank guns, 37mm, 57mm, 85mm, 100mm Anti-aircraft guns, 85 SA-2 Surface-to-Air Missiles	C. ARTILLERY: 20,000 100mm, 122mm, 130mm, 152mm, 180mm, 203mm field guns/howitzers, 122mm, 152mm Self-propelled Artillery 7,200 82mm, 120mm, 160mm, 240mm mortars; 2,700 122mm, 140mm, 240mm Multiple Rocket Launchers; 10,800 76mm, 85mm, 100mm Towed and ASU-57/85 Self-propelled Anti-tank Guns; Swatter, Sagger, Spigot, Spandrel, Spiral Anti-tank guided weapons. 9,000 23mm, 57mm towed, ZSU-23-4, ZSU-57-2 Self-propelled Anti-aircraft Guns, Surface-to-Air

TABLE II - I
(continued)

CHINESE ARMY	SOVIET ARMY
	C. ARTILLERY (cont): (mobile systems), unspecified amount of SA-4, SA-6, SA-7, SA-8, SA-9, SA-11; About 1,300 Surface-to-Surface (nuclear capable) to include FROG, SS-21, SS-12

Source: The Military Balance: 1979-1980

with cannon,[26] F-6 fighters, a Chinese improvement of the 15 year old Soviet M-19 and the Korean War vintage MIG-15s and MIG-17s. The Chinese made MIG-21 was basically a failure. There are only about 80 MIG-21s produced in China. It was believed that the Chinese did not have the technology and metallurgy to produce the high-yield and sophisticated engine. The Chinese built MIG-21s were nearly all out of operation in 1974-75. That failure was probably the major reason why the Chinese contracted with Rolls Royce for the purchase and the licensing rights to the Spey jet engine.[27]

In the bomber fleet, the Chinese bombers remain outmoded when compared to those of the U. S. and the USSR. The most numerous is the IL-28, a Soviet light jet bomber designed in 1947, and an over 20 year old Soviet designed TU-16 Badger which did not come into production in China until 1968.[28]

In the Tactical Air Force, the Chinese do not have any aircraft that are comparable to the renowned MIG 23/27 "Flogger" with improved radar system and speeds up to Mach 3.2 with a maximum combat radius of 805 miles. The F-6 (MIG-19) can only achieve the speed of Mach 1.3 and a maximum combat radius of 426 miles with external tanks.[29]

This disparity is worsened by the fact that over 3,000 combat aircraft in the strategic Air Defense Force

and 850 combat aircraft in the Navy are not included in the 4,350 combat aircraft in the Soviet Tactical Air Force inventory.[30] Again, China is outclassed and outnumbered by its neighbor, the Soviet Union (See Table II-2).

C. NAVY

The PLA Navy was formally established in 1950 when the various regional naval forces were unified.[31] Its beginning was much like that of the PLA Air Force, formed from basically abandoned or captured equipment from the fleeing Nationalist Chinese troops.

Presently, the Navy has become the largest indigenous navy in Asia. In numbers of ships, it ranks second only to the Soviet Navy.[32] The largest surface combat ships, however, are limited to only handfuls of destroyers and frigates. Its submarine force consists of some 91 medium-range torpedo attack submarines, a Han class nuclear powered submarine, and a Golf class submarine with SLBM tubes, but without missiles. The strength of the PLA Navy lies in its large inventory of fast attack patrol craft. There are 160 Osa/Hola and Lomar fast attack craft armed with Styx surface-to-surface missiles.[33] These missiles carry a high explosive warhead with enough power to cripple large surface combatants to include aircraft carriers. They are vulnerable to electronic countermeasures,

TABLE II - 2

CHINESE TACTICAL AIR FORCE		SOVIET TACTICAL AIR FORCE	
MIG-15	500	MIG-21	1,000
MIG-17 and MIG-19	3,700	MIG-23/27	1,400
MIG-21	80	MIG-25	170
TU-16 Bomber Med	80-90	YAK-28	60
IL-28 Bomber Light	300	SU-7	220
TU-2 Bomber Light	100	SU-17	640
Plus	Others	SU-19	230
	4,700	IL-28	250
		Plus	Others
			4,350

Source: Military Balance, 1979-1980

however, as was proved in the 1973 Middle East War.[34] In addition to the missile boats, the PLA Navy has 403 Fast Attack Gunboats, 220 Fast Attack Torpedo Boats, and over 120 Hydrofoil Torpedo Boats of their own design.[35] All of these attack craft are trained in high speed mass formations, often at night and in foul weather.[36] The concept is to combine surprise, numbers and possibly in a mixed mode to counter an advanced Soviet Navy with electronic countermeasures. (See Table II-3)

When it compares to the Soviet's modern "blue water" Navy, the Chinese Navy appears to be "shallow water" oriented. The present combat capabilities of the Chinese Naval forces probably have only limited influence against Soviet Naval operations, and it is highly vulnerable to concerted Soviet air or submarine attack. The highly sophisticated Soviet anti-submarine operations probably can easily destroy most PLA submarines in an outbreak of war.

The PLA Navy's greatest problem is too few major surface combatants to protect its sea lanes, versus the Soviet's Navy capability to deny the use of these lanes. Needless to say, the absence of aircraft carriers and the lack of heavily armed cruiser-type surface combatants in the PLA Navy hinder the projection of naval power and as a credible deterrent to protect its coastal water.

TABLE II - 3

CHINESE NAVY	SOVIET NAVY
I. STRENGTH: 360,000 includes 38,000 Naval Air Force, 38,000 Marines	I. STRENGTH: 433,000 includes 59,000 Naval Air Force, 12,000 Naval Infantry and 8,000 Coast Artillery and Rocket Troops
II. EQUIPMENT:	II. EQUIPMENT:
A. Major Surface Combat Ships: 25 includes 11 destroyers which 7 are equipped with Styx surface-to-surface missile, 14 frigates which 4 are equipped with Styx surface-to-surface missile	A. Major Surface Combat Ships: 275 includes 2 kiev carriers, 2 ASW helicopter cruisers, 16 ASW cruisers, 19 cruisers, 50 ASW destroyers, 50 destroyers, 136 frigates
B. Attack Submarines: 91	B. Attack Submarines: 1. Nuclear: 41 2. Diesel: 138
C. G-class Submarine (SLBM tubes but without missile): 1	C. Cruise Missile Submarines: 1. Nuclear: 45 2. Diesel: 24
D. HAN Submarine: 1	
III. NAVAL AIR FORCE:	III. NAVAL AIR FORCE:
800 shore-based combat aircraft. Includes: 150, IL 28 w/torpedos, 575 MIG-17s, MIG-19s, some F-9 Fantan, others.	870 combat aircraft. Includes: 30 TU-22M backfire, 295 TU-16 Badger ASM, 40 TU-22 Binder, 30 YAK-36 Forger (VTOL), 30 Fitters, 40 TU-16 Badger Recce, 30 TU-16 ECM, others.

Source: The Military Balance: 1979-1980

D. STRATEGIC FORCE

In October 1964, the People's Republic of China exploded its first atomic bomb at Lop Nor, and two years and eight months later, its first hydrogen bomb. Between 1964 and 1979, China has exploded 25 nuclear devices.[37]

Deterrence has been and remains the fundamental objective of the Chinese strategic forces. Chinese nuclear weapons are vastly inferior to those in the Soviet inventory. Its deployments are not designed to play a part in the conduct of a land battle, and are probably vulnerable to a preemptive strike by the Soviets.

1. Nuclear Missiles

The principle of nuclear deterrence, according to James Schlesinger, then Secretary of Defense, must be based on a high-confidence capability for second-strike retaliation.[38] It is most certain that China has not come to possess a second-strike capability, but the Soviet Union will never be able to be sure that some would not survive to strike back to destroy the Soviet cities in retaliation. By definition, deterrence means the prevention from action by fear of the consequences; it is a state of mind brought about by the existence of a credible threat.[39]

According to General George Brown, then Chairman of the U. S. Joint Chiefs of Staff, noted in his military posture report for FY 1979, that the Chinese do have a limited but credible capability for nuclear strikes by missiles around its periphery.[40] Presently, three types of liquid-fuel ballistic missiles are currently in service with the PLA, and one is under development.[41] (See Table II-4)

CSS-1: The CSS-1 MRBM can reach targets in the Eastern USSR, peripheral nations and some U. S. bases in the Far East. The MRBMs in service have a range of 600 to 700 miles. The deployed force, has not increased significantly since 1972. It is believed to be steadily phased out and replaced with the IRBMs.

CSS-2: CSS-2 IRBM missiles are currently deployed in China and the number is expected to remain the same. As currently deployed, CSS-2 missiles can reach targets in Central and Eastern Asia. These missiles have a range of 1,500 to 1,750 miles.

CSS-3: The CSS-3, a limited-range ICBM system, was flight tested in 1976. While the PRC has not abandoned the CSS-3 program, only limited numbers will probably be deployed. This strategic missile gives the PRC a limited capability to cover targets in Asia, parts of the European USSR, the Marianas, Alaska, Australia, and portions of the Middle East,

but not the continental U. S.. These limited-range ICBM systems are believed to be able to reach a range of 3,000 to 4,000 miles.

CSS-X-4: The CSS-X-4 is the PRCs only ICBM with a potential to hit continental U. S. targets. It is in the same class as the US TITAN II and the Soviet SS-9. On 21 May 1980, China announced the successful results with its first full flight test with the CSS-X-4. Two missiles were believed to have been launched from Xinjiang Province, and impacted in an open ocean area in the South Pacific. It is believed that China could have a small number of CSS-X-4s deployed in silos by the early 1980s, and their effective range is estimated to be between 7,000 and 8,000 miles.

2. Strategic Aviation

The PLA Strategic Bomber Force, credited with a nuclear capability, like their peers in the Tactical Bomber Force, is outdated technologically when compared to those of the Soviets and U. S.. There are about 90 TU-16 medium bombers with a radius of action up to 2,000 miles, available for delivery of nuclear munition as compared to 850 in the Soviet strategic force.[42] In addition, the Chinese do not have any supersonic long range bombers comparable to the modern Soviet Backfire Bomber. (See Table II-4)

TABLE II - 4

CHINESE STRATEGIC FORCES	SOVIET STRATEGIC FORCES
ICBM: 2 CSS-3	OFFENSIVE:
IRBM: 50-70 CSS-2	a. Navy: 1,028 SLBM in 90 submarines
MRBM: 40-50 CSS-1	b. Strategic Rocket Force: ICBM: 1,398 IRBM and MRBM: 710
AIRCRAFT: About 90 TU-16 Medium Bombers	c. Long-range Air Force: Aircraft: 850
	DEFENSIVE:
	a. Aircraft: About 2,600
	b. Airborne Warning and Control Aircraft: 18
	c. ABM: 64 ABM-1 Galosh
	d. SAM: Some 10,000 launchers at over 1,000 fixed sites

Source: The Military Balance: 1979-1980

It is obvious that the Chinese nuclear forces are no match to that of the Soviets. The Soviet's nuclear umbrella can only be matched by that of the U. S.. However, China can be expected to continue to improve its military capability in order to counter the perceived Soviet threats and to achieve a capability to project its power into other border states.

E. DEPLOYMENT

Even more fearful is the deployment of Soviet forces along the Sino-Soviet border. Since the Sino-Soviet border clashes in 1969, the number of Soviet divisions on the Chinese frontier tripled to approximately 46 divisions, including six armored divisions, with sizeable artillery, tactical air support, and a force of short-range nuclear missiles.[43]

The Soviet armored forces enjoy a 3:1 superiority in tanks and 10:1 in armored personnel carriers. In short-range nuclear missiles, the number available to the Soviet forces has increased. Unspecified numbers of SS-1 and SS-12 mobile missiles with ranges of 180 and 500 nautical miles have been deployed. Nearly 200 MREMs and IREMs had been deployed along the Trans-Siberian Railway, including some of the new SS-20 IREMs with MIRV capability. In addition, the Soviets had over 400 ICBMs in the Far East as well as 260 SLBMs.[44]

In response to increased tension following the 1969 border clashes, the Chinese initiated a major shift in force deployment. The composition and disposition of Chinese forces demonstrated Chinese fear and apprehension regarding Soviet intention in the area. The Chinese maintained the bulk of their armored forces in North China.[45] In the four military regions of Shenyang, Beijing, Lauzhou and Xinjiang, which are contiguous with the Soviet Union and Mongolia, Chinese employed between 65 to 70 main force divisions, and 33 to 41 local or regional force divisions. This means over 50 percent of the total army strength is deployed along the Sino-Soviet border.[46]

F. AWARENESS OF ITS NEEDS

It is true to an extent that a superior numerical force can compensate for the inferior weapons, but this limit was reached and demonstrated during both the Korean War and the recent Sino-Vietnamese border conflict. The antiquated weapons in the Chinese arsenal had been recognized and remained to be a major concern in the Chinese political and military circles.

In March 1977, Hua Guofeng outlined his plan for the future PLA: smaller, more streamlined and with more advanced

weapons, tougher discipline and a more centralized line of command.[47] In October 1979, Defense Minister Xu Xiangqian indicated the Chinese military shortcomings in the article, "Strive to Achieve Modernization in National Defense -- in Celebration of the 30th Anniversary of the Founding of the People's Republic of China." He stated:

> The fast development and extensive application of modern science and technology have caused tremendous changes in weaponry. The modernization of weaponry has become an integral part of national defense modernization. . . . We should admit that our army cannot meet with the demands of a modern war. There are many questions concerning the use of modern weapons, the organization of joint operations and bringing the various armed services into full play.[48]

The candid attitude and the openness of the Chinese leaders in acknowledging the anachronistic military organization lead one to believe an about-face policy of the customary rhetoric. This change was further demonstrated by the Chinese military missions abroad shopping for Western arms and Hua's four-nation tour of Western Europe in November 1979. These events marked the eagerness and willingness on the part of the Chinese to learn from foreign experiences and attempt to acquire the much needed modern arms and technology.

G. SUMMARY

After having analyzed the capabilities of the Chinese People's Liberation Army, the author has come to a conclusion

that virtually everything needs to be replaced.[49] The Chinese armed forces are trained, equipped and deployed mainly for defensive missions. The ground forces lack adequate mobility and defenses against tanks and aircraft. As indicated in the study, most of the major end items are outdated technology of the late 1950s and early 1960s.

The threat has been identified as being highly mobile, armored, capable to mass attacks and firepower; it possesses a long-range penetration capability; it can attain air superiority quickly and easily; and, has an effective tactical and strategic nuclear umbrella. In order to counter this threat effectively, Beijing must act quickly and dedicate completely to the force modernization program of the PLA.

There are some questions, however, Beijing must answer first in order to determine the direction and effort that is needed to modernize its armed forces:

1. Can China afford a rapid conventional force modernization program economically?
2. Will China be able to acquire large quantities of modern arms and technologies through arms transfer programs?
3. Will the PLA be able to absorb these modern arms and technologies in the short run?

FOOTNOTES

1. Selected Works of Mao Tse-Tung, vol. 2 (New York: International Publishers, 1954), pp. 272-273.

2. This total does not include the paramilitary forces. Figures given are from the following sources: The Military Balance: 1979-1980, Defense Intelligence Agency's Handbook on the Chinese Armed Forces, and Defense Foreign Affairs Handbook: 1978-1979.

3. Defense Intelligence Agency, Handbook on the Chinese Armed Forces (DDI-2680-32-76; Washington: July 1976) (Hereafter, DIA "Handbook"), pp. 2-6.

4. International Institute of Strategic Studies, The Military Balance: 1979-1980 (London: International Institute of Strategic Studies, 1979)(Hereafter IISS "Military Balance"), pp. 9-11, 59-61.

5. DIA, Handbook, pp. 2-10.

6. IISS, Military Balance, pp. 59-61.

7. DIA, Handbook, pp. 5-19.

8. Leo Y. Liu, "The Chinese People's Liberation Army," Current History, September 1978, p. 57.

9. CONMILT: The Defense Monthly (Hong Kong: The Conmilt Press, November 1979), p. 16.

10. Joint Publication Research Service, China Report, 74696, 3 December 1979 (Hereafter JPRS, China Report), pp. 54-56.

11. DIA, Handbook, pp. A-28.

12. IISS, Military Balance, p. 5.

13. Ibid.

14. Ibid.

15. Edward N. Luttwak, Problems of Military Modernization for Mainland China, (Paper presented in "China Conference" in Taiwan, 1978), p. III-3-1; Jane's Weapon System, 1979-1980 ed., p. 309.

16. DIA, Handbook, p. A-25.

17. Liu, p. 57.

18. Luttwak, p. III-3-7.

19. IISS, Military Balance, pp. 59-61.

20. Luttwak, p. III-3-6.

21. IISS, Military Balance, p. 59.

22. Ibid.

23. DIA, Handbook, pp. A-3, A-4.

24. IISS, Military Balance, pp. 59-60.

25. Ibid., pp. 9-11.

26. Ibid., p. 61; Newsweek, 21 January 1980, p. 51.

27. Harvey W. Nelson, The Chinese Military System (Boulder: Westview Press, 1977), p. 163.

28. General George S. Brown, United States Military Posture for FY 1979, (Washington: U. S. Government Printing Office, 1978), p. 42.

29. Jane's All the World's Aircraft, 1979-1980 ed., (New York: Franklin Watts Inc., 1979), pp. 30, 193, 196.

30. IISS, Military Balance, p. 11.

31. DIA, Handbook, p. 1-6.

32. Ibid.

33. IISS, Military Balance, p. 11.

34. Nelson, p. 173.

35. IISS, Military Balance, p. 60.

36. Nelson, p. 174.

37. IISS, Military Balance, p. 9-11.

38. John E. Endicott and Roy W. Stafford, Jr., eds., American Defense Policy, (Baltimore: The John Hopkins University Press, 1978), p. 83.

39. Ibid., p. 608.

40. Brown, pp. 59-60.

41. JPRS, China Report, 74286, 2 October 1979, pp. 34-35; JPRS, China Report, 73999, 13 August 1979, p. 11; DIA, Handbook, p. A-50; Monterey Peninsula Herald, 9 May 1980; and San Jose Mercury, 22 May 1980.

42. IISS, Military Balance, pp. 9-11.

43. Ibid., p. 10.

44. Harry Gelber, Technology, Defense and External Relations in China: 1975-1978 (Boulder: Westview Press, 1979), pp. 64-65.

45. JPRS, China Report, 74714, 5 December 1979, p. 8.

46. Ibid., IISS, Military Balance, p. 60.

47. Angus M. Fraser, "Military Modernization in China," Problems of Communism, September-December 1979, p. 37.

48. Foreign Broadcast Information Service, People's Republic of China: Daily Reports, 18 October 1979 (Hereafter FBIS-PRC), p. L-12.

49. The above analysis involved only a portion of the critical items in the combat equipment inventory. Not considered are the combat support and combat service support categories that are believed to be equally outdated. The overall disparity will probably be worsened if the combat support and service support elements are analyzed.

III. FIRST OBSTACLE IN THE MODERNIZATION OF NATIONAL DEFENSE: ECONOMY UNCERTAINTY

A. THE COST OF MODERNIZATION

In a recent Rand study prepared for the Office of the Assistant Secretary of Defense, Leslie Gelb indicated several reasons for the lack of significant import of military related equipment and technology by the Chinese during the past two decades. These reasons are: the Chinese character of self-reliance, the "never again" attitude produced by the withdrawl of Sovit assistance in 1960, the shortage of foreign exchange and the resource allocation problems generated with competition from the civilian industrial sector, and a lack of willing suppliers.[1] While these are valid and significant points, one must not overlook, however, the sheer size of the army was the main reason for the lack of significant import of military related equipment and technology. Economically, it is just not practical to import arms to equip a four million-man army.

Unlike most OPEC nations, where resources are available and it is relatively feasible to import modern arms and technology to equip their relatively small armed forces, China has neither.

Due to the enormous size of the PLA, force modernization will not be an easy task. In view of more than 250 combat divisions and 280 independent regiments in the main and local forces, modernization to the minimum level of adequacy would call for at least 2 to 3 times the full complement of the active U. S. Army.

In a recent Pentagon study, it indicated modernization of the PLA would call for:

3,000 to 8,600 improved medium tanks
8,000 to 10,000 armored personnel carriers
16,000 to 24,000 heavy duty trucks
6,000 air-to-air missiles
720 mobile surface-to-air missiles
200 air superiority aircraft
240 fighters and or fighter bombers[2]

In the same study, it was estimated that it would cost China about $41 billion if it bought U. S. arms and equipment to upgrade its forces to a minimum level of adequacy. This equals to roughly about three and a half times the total Chinese defense budget for 1979 of $12.9 billion.[3]

The question remains, will the Chinese economy be able to bear the cost of this modernization?

B. PERIOD OF ECONOMIC "READJUSTMENT"

Economically, in order for China to sustain this immense cost of modernization, it has to have a very

strong, stable and resourceful economy, possibly with large quantities or the availability of foreign exchange, a favorable trade position or high potential export markets for its indigenous produced goods, be a reliable credit risk, and plan its industrial capacity so as to satisfy its civilian and military needs accordingly.

Since the announcements of the Four Modernizations and the Ten-Year Plan for the development of the National Economy, 1976-1985, China's pragmatic leaders have come to the conclusion that the goal was too ambitious. A more realistic plan and cautious approach to development was announced by Premier Hua Guofeng at the Second Session of the Fifth National People's Congress on 18 June 1979. In his report, he stated that, "the country should devote the three years beginning from 1979 to readjusting, restructuring, consolidating and improving the national economy," - this new policy is believed to be the brainchild of Chen Yun, an economic planner, now a Vice-Chairman. He further pointed out that, "(we must) strive to modernize our national defense on the basis of a modern economy."[4]

During this economic readjustment period, the State Investment Funds were restructured to favor the agriculture and light industry. The heavy industry's share was reduced from 54.7 percent in 1978 to 46.8 percent in 1979; light industry's share rose to 5.8 percent from 5.4 percent; and,

agriculture received 14 percent compared with 10.7 percent in 1978.[5]

According to Yu Dixin, leader of a recent Chinese economic delegation to Hong Kong, the ambitious production goals of the Ten-Year Plan had been reduced. The grain production target of 440 million tons by 1985 has been pushed back to the end of the 1980s; the goal of doubling iron and steel production to 60 million tons by 1985 has been pushed back to the end of the decade; and with growth of .03 percent and 1.9 percent in coal and oil production respectively in 1979, it is not expected that China will be able to attain its goals set in the Ten-Year Plan.[6]

Moreover, China has planned to allocate 20 percent to 25 percent of its annual export earnings for the repayment of foreign debts, according to Chinese Foreign Trade Minister Li Qiang.[7]

The purpose of this three-year economic readjustment program was to allocate greater emphasis on agriculture and light industry to balance the uncertainty in the economy caused by a $6.5 billion budgetary deficit reported in 1978, and the costly war with Vietnam in February and March 1979.[8] Due to the rapid turn-over nature in the agriculture and light industry sectors, the Chinese government can realize quick return on investment, especially when these two sectors account for a substantial portion of China's exports, and also be able to meet the ever increasing domestic demands.

In the interim, however, these events will definitely have an adverse effect on the modernization of the national defense.

C. LACK OF FOREIGN EXCHANGE - TRADE DEFICIT

In the arena of foreign exchange, it was reported just recently that China has banned the circulation of foreign currencies as of April 1, 1980. Instead, foreign exchange certificates are being issued to foreigners and overseas Chinese.[9] Due to the attractiveness of the foreign currencies, Chinese can buy imported goods sold only for hard currency in special shops meant for foreigners. Chinese planning to emigrate also need hard currencies, and Chinese factories and institutions are trying to by-pass the normal channels and buy imported equipment directly with foreign exchange. These events have led to high demands in black market trading, and it is threatening the stability of the country's currency, the Yuan.[10]

To secure the much sought after foreign exchange, the Chinese embarked on various programs to improve its foreign exchange standing. These included the newly created joint-venture program, increased emphasis on export of raw material and industrial goods, the expanding tourist trade, and other programs.

Through the establishment of the joint-venture code, Beijing hopes with large foreign technological and capital investment in the Chinese light industry, it will generate a large portion of the country's foreign-exchange earnings. As indicated earlier, light industry generally means quicker returns on investment, at the same time provides more consumer goods so the population can achieve possibly higher standards of livings, and because it is usually labor intensive, it means it can help to eliminate some unemployment problems that are staggering the Chinese economy. Ma Hong, Vice President of the Academy of Social Science, Beijing's think tank, recently indicated over 7.5 million are unemployed in China.[11]

Since the adoption of the much publicized joint-venture law almost a year ago, the Chinese have been and still are in the process of drafting regulations to implement the joint-venture law. Due to the delay in finalizing the legal framework and the lack of corporate, labor, tax law and other ordinances, many foreign investors are hesitant to take advantage of this opportunity.[12]

In the field of foreign trade, China exports rose to between $13.2 billion and $13.5 billion, while imports rose to between $15.3 billion and $15.5 billion from $11.35 billion,[13] with a deficit of almost $2 billion. Though, one must consider almost 20 percent of the imports are in plant, technology and capital investment.[14] This could mean in the long run

China can generate more goods and services for future exports, thereby, creating a higher foreign trade standing.

In light of the Sino- U. S. normalization in January 1979, tourism has become an important industry in China. It was estimated that over a million tourists had visited China in 1979, and state funds are being spent on the development of 40 major tourist areas to attract more foreign visitors.[15] The Chinese have not published the estimated sales of goods and services through tourism, but it can be estimated to be in the vicinity of the billion-dollar mark.

Although with these and other economic programs, China was only able to achieve a light economic growth and a trade deficit of almost $2 billion. It is clear that in the short term, China will not be able to improve its foreign exchange standing, and this means military modernization could be affected by it. The future of the Chinese foreign trade, however, is glistening at the end of the long dark tunnel by the recent passage of the Most Favored Nation status in the United States and the admission of China into the International Monetary Funds.

D. NEW DEVELOPMENTS

On 24 January 1980, the U. S. Congress overwhelmingly approved a resolution giving China the Most Favored Nation status.[16] It means lower tariff and the right to conduct

trade with the United States on an equal basis with most other foreign nations. According to the National Council for U. S. - China Trade, Most Favored Nation status for China could mean anywhere from a minimum of $400 million to a maximum of $1 billion in extra imports of Chinese goods over the year 1980 to 1982.[17] Whether this will remedy the Chinese economy is something that has yet to be seen.

On 17 April 1980, China was voted into the International Monetary Fund with a quota of about $700 million.[18] This means considerable financial aid for China and a much better position for its future loan negotiations.

E. SUMMARY

Under the new management, the twentieth century Chinese economy has just entered into the adolescent phase. With the recent passage of the Most Favored Nation status by the U. S. Congress and the admission into the International Monetary Fund, China's economy is now growing at a rate much faster than what it is accustomed to, and the new economic policy of "readjustment" is a reflection of some of these growing pains. China's economy has great potential, limited only by its ability to plan and allocate critical resources to the civilian and military sectors. On one hand, any large acquisition of military hardware will be accompanied with tremendous costs and will interfere seriously with

other modernizations - agriculture, industry, science and technology. On the other hand, Chinese cannot effectively deal with the northern threat from the Soviets with an antiquated force.

In the interim, emphasis on agricultural and industrial sectors mean less for military modernization, especially when it is magnified with the competition for foreign exchange and the shortage of it. Thus, economically, it is not possible for China to undergo extensive modernization of the armed forces until at least 1982, at the conclusion of the three-year "readjustment" period.

FOOTNOTES

1. Richard H. Solomon, ed., Asian Security in the 1980: Problems and Policies for a Time of Transition, (Santa Monica: The Rand Corporation, 1979), p. 264.

2. New York Times, 4 January 1980.

3. The China Business Review, July-August 1979, p. 45.

4. Beijing Review, No. 40, 5 October 1979, p. 24; Far Eastern Economic Review, 8 June 1979, p. 11.

5. Far Eastern Economic Review, Asia 1980 Yearbook, (Hong Kong: Far Eastern Economic Review Ltd., 1980), p. 159.

6. The Asian Wall Street Journal, 1 March 1980.

7. The Asian Wall Street Journal, 4 February 1980.

8. John B. Starr, "China's Economic Outreach," Current History, September 1979, p. 51.

9. Beijing Review, No. 15, 14 April 1980, p. 6.

10. The Asian Wall Street Journal, 4 February 1980.

11. Far Eastern Economic Review, 17 August 1979, p. 53.

12. The Asian Wall Street Journal, 21 January 1980.

13. The Asian Wall Street Journal, 28 January 1980.

14. Asia 1980 Yearbook, p. 162.

15. Ibid, p. 163.

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18. The Asian Wall Street Journal, 21 April 1980.

IV. ABSORPTION PROBLEMS - THE HUMAN ELEMENT - SECOND HURDLE

A. EFFECT OF THE CULTURAL REVOLUTION

China recently disclosed that illiteracy has increased during the past ten years. It is estimated that about 120 million people under the age of 45 are now illiterate, according to Deputy Minister of Education, Zang Boping.[1] Indeed, the Great Proletariat Cultural Revolution has taken its toll. During this chaotic decade (1967-1976), millions of young students donned with Red Guard arm bands, marching through the streets of China, chanting and shouting the slogans of Mao's "little red book," destroying anything that bears the resemblance or considered bourgeois influence. During this period, many party officials and educators were attacked, arrested, humiliated and were forced to confess their "crimes" at public trials. Rivalries between different factions had almost caused an economic stand still, and most school and universities were closed for the better part of these turbulent years. Consequently, China has produced a generation of semi-literate youth for whom there is no place in the social and economic arrangement.

It is difficult to assess and measure the extent of damage caused by the Cultural Revolution, especially the

intangibles - repercussions that this will have on the future generations. In the mean time, shortages of skilled workers, technicians, soldiers on one hand and millions of unemployed semi-literate youth on the other have caused an economical and technological absorption problem in China. Many Western observers have come to regard to youth of this era as the "lost generation."

B. THE SOLDIERS

The soldier, whom is a reflection of society and is the basic element in the military-technology absorption process, is thought to be unsophisticated and not technologically gifted, said Dr. Harlan Jencks. He further indicated that the Cultural Revolution has affected the soldiers educationally, militarily and ideologically well into the mid 1970s. Its residual effects are being felt in the armed services today as evidenced by the low technical proficiency demonstrated by the individual.[2]

The making of a Chinese soldier starts with a unique situation in China's military conscription system. It is plagued with the problem of screening the millions of youth that are eager to join every year, since the armed services are among the most alluring paths to success in Chinese society.[3] By the conscription physical standard, the recruits are the "cream of the crop." With the

peasant-worker class background, they are used to regimentation and relatively simple life style and have a strong sense of obedience and under competent leadership will attempt to carry out his mission.[4] While the overwhelming majority of the recruits are middle school graduates drawn from the peasant-worker class, some, however, who can neither read nor write Chinese are recruited, especially minority people.[5] These problems definitely had an adverse effect on the capabilities of the PLA. It is believed that the technical deficiency can alone constraint the modernization of China's armed forces in the near future, especially with the employment of sophisticated weapons and equipment. Perhaps it was best summarized in a recent Pentagon study:

> "Take the form of technology or high-technology end items, China's ability to absorb and utilize the technology would be questionable. Even the maintenance of low-technology equipment would be problematical in the hands of China's relatively unsophisticated common soldiers."[6]

The concern of this technical deficiency was expressed by Xu Xiangqian, the Minister of Defense of the People's Republic of China:

> "...our armymen's scientific and cultural level is not high and that an army cannot be modernized if its men do not have modern scientific and cultural knowledge, there are acute contradictions before us and we must make arduous efforts to resolve them. Otherwise, even if our army has advanced weapons, it cannot use them and bring them into full play."[7]

Besides the technological constraint, the PLA soldiers have been hindered by the fact that historically they were

the working, production and political forces in China. It was not unusual during farming seasons, soldiers in army uniforms are often seen working together with the workers and the peasants. Synonymous with the PLA are its renowned association with civil affairs and political entanglements throughout its history. Therefore, time is divided between the PLA's various missions that otherwise could be devoted to training.

Recently, the emphasis on politics and motivation in military training has been discarded in favor of strict attention to technical and tactical studies based on the "lesson" learned in the recent 16-day Sino-Vietnamese border war.[8] The Chinese have realized the importance and the lack of combined-arms operations in the recent conflict with Vietnam - which has cost them dearly.

To redress this ill, the Chinese are beginning to train infantrymen and artillerymen together.[9] Mao's once respected military thoughts are now seen almost useless. This was well illustrated in the 22 October 1979 issue of People's Daily. It said:

> "The military thought of Mao Zedung is a science that develops with growth of practice and not an unchangeable dogma . . . the principles, politics and tactics should also be changed accordingly."[10]

With the removal of these constraints, the way to professionalism is wide open. Military discipline has been tightened and the military training has been stepped up

to enable troops to master complex weapons systems.[11] Under the present Military Service Act of 1978, the compulsory military service in the army has been lengthened from two to three years, and the technical personnel are often retained for longer periods.[12] It appeared that the Chinese had made an effort to prolong the length of military service to compensate for the longer tactical and technical trainings required for the peasant-worker based army. However, the work loads for this new generation of soldiers will not vary significantly from their predecessors due to its continued association with the "work force and production force" concept as indicated by a joint circular issued by the Headquarters of the General Staff in October 1979. The message called on the whole army to carry on this historical tradition, so they can give assistance in capital construction, farming or in major projects in the cities in order to advance the four modernizations.[13]

C. THE OFFICER CORPS

". . . No modernization, however, could have succeeded without large numbers of officers skilled in running a complex military establishment," said Professor Ellis Joffe[14] of the post-liberation Chinese army. This massive project of military modernization faced by the Red army leaders in

the 1950s will again be the major challenge to the Chinese Officer Corps of the 1980s.

Like the soldiers, the Chinese Officer Corps was seeded with basically the same problems because the majority of officers are chosen directly from the ranks. The system of 1955 - 1965, under which officers were commissioned straight out of colleges and academies, has been abolished, although this continues in the cases of certain types of technical specialists whom are selected from graduates of senior middle schools for advanced training at military technical institutes.[15]

Selection criteria are based as much on ideological orientation as on proven military ability,[16] this is particularly true during the era of "reds versus experts." This selection process, however, is seen leaning more toward the military ability as a result of the Sino-Vietnamese border war. Those who distinguished themselves in the war are being quickly "commissioned" into the Officers Corps. During the latter part of 1979, Fuzhou Military Region Infantry School enrolled 1,600 new officer students, of whom 1,100 were veterans of the Vietnam campaign.[17]

There are other indications of a resurgence in military professionalism. First, it was reported in Beijing Daily in August 1979, that 20 military academies were recruiting students in Beijing municipality for training of technical

and military command personnel.[18] This can be clearly seen as a beginning of a return to the "academy system" and the distinction of an "officer class." Second, the Chinese high command has ordered a reshuffling of leadership organs and a weeding out of undesirable personnel in the Officer Corps, and the stated criterion for the appointment of officers to important posts is professional competence.[19] Lastly, according to the party journal, Red Flag, a set of regulations concerning the recruitment of officers had been promulgated but without giving any significant details about their contents.[20] Like the ancient Chinese philosophical teaching of "Yin-Yang" - the greater "Yin" grows, the sooner it will yield to "Yang" - the relationship of "red and expert" has been on the shift since the death of Mao and the ascendancy of the pragmatists Hua and Deng. This "Yin-Yang" cycle now puts the "experts" slowly back into the dominate position. For example, in an article published by the Liberation Army News, in reference to officer training, it stated that, "the key to successfully training troops lies with the officers, and that the officers cannot be trained with the same methods as those for soldiers, for a modern army requires officers with professional training and development."[21]

In addition, since the Vietnam Campaign, the Chinese have given enormous emphasis to technical training.[22] In

an October issue of Red Flag, it demanded that officers should be trained in modern science and technology. In addition, training should be hard and related to likely combat situations.[23] In March 1980, a Chinese PLA leader was interviewed by a group of Japanese reporters at the Defense Ministry in Beijing. The PLA leader commented:

> "Beginning this year, the Liberation Army will undergo changes in the direction of alloting most of its time to strengthening military training. As a result of this, the army's productive activities will be limited to vegetable production and hog raising . . . When the economic development progresses, these productive activities will also be terminated. Work is underway now to examine the possibility of reviving the rank system for military personnel . . . This decision is based on our experience from the war with Vietnam. The "Beijing Society for International Strategy" has already been inaugurated for the purpose of studying the strategic situation of the world . . ." [24]

The Chinese military has definitely embarked on a plan to revive and alter the human element of the national defense - the least costly of all. If these policies were indeed carried out, the Chinese armed forces will be on a much firmer foundation to sustain the infusion and integration of sophisticated arms and technology in the future. But, one should realize that a well trained soldier will not be totally effective unless he is complemented with proper equipment to accomplish his mission.

D. THE WORKERS AND TECHNICIANS

In the 1978 Watershed Plan that changed the course of China, Hua Guofeng spoke of the need of science and technology. He said:

> "We must raise the scientific and cultural level of the entire Chinese nation to a much higher level so that our working people will master modern techniques of production and scientific knowledge. At the same time, we must build a vast army of working class intellectuals. Only thus can we successfully fulfill the grand target of building a modern, powerful socialist country . . . The gap between our own and the advanced world scientific and technical level which has been narrowing has widened again in recent years. The quality of school education has fallen sharply. In all fields of endeavor, there are not enough trained younger men and women ready to take over from older experts . . . We must conscientiously study the advanced science and technology of all countries and turn them to our account." [25]

The Chinese have instituted various methods to upgrade the scientific and technological level of their work forces. It ranges from the revival of the work-study[26] and spare-time education for worker programs;[27] the establishment of television colleges to train workers and staff members without absence from their posts;[28] to the urging of enrollment of young people into vocational and technical school to meet the needs of the four modernizations.[29] But to raise the scientific level among the workers alone would be a herculean task when one considers the size of the Chinese work force of 100 million people. It was reported recently by Chinese sources that between 70 and 80 percent of China's workers

today have not attained the level of junior middle school graduate, the equivalent of our junior high school level. In addition, only two-thirds of them have achieved the rating of a second or third grade worker status with eighth grade being the highest, and merely three percent of the workers are employed as technicians.[30] Perhaps even more critical is the lack of managerial expertise suitable for large-scale modern industrial complex.[31] This critical shortage of competent technical and managerial personnel will significantly limit the military industrial capability to absorb foreign technology because it is this human element that determines the ability for the industry to incorporate, adapt and reproduce technology.

Without much success, admitted Hu Yaobang, General Secretary of the Central Committee of the Chinese Communist Party. He further alleged that, ". . . We have failed to bring about an upsurge in the movement to love and study science on a nationwide scale." He then proposed three measures to develop scientific undertakings:

- The first important one is to form with great resolve a contingent of truly socialist-minded, competent cadres with expertise
- The second important measure is to build up the ranks of science and technology in a big way, into an effective force and a reserve for our country
- The third important measure is for the whole Party to give full support to scientists and scientific workers in their efforts to work out their grand projects [32]

The dissatisfaction expressed by Hu was all too well illustrated in his speech. In the first measure, he charged that many cadres are not technically proficient and are still being selected and promoted according to the "old set pattern" - politics rather than expertise. He further stated that many comrades in the party still do not trust people who have knowledge and expertise. In the second measure, he criticized the damages rendered by Lin Biao the the "Gang of Four" during the Cultural Revolution in which approximately 160 million young people between the ages of eight and eighteen neglected their studies. In order to build up the ranks of science and technology, he called upon the second "re-study campaign" since Mao's earlier effort in the "socialist education movement" during the early 1960s. Under the last measure, he cited the shortage and substandard level of scientific and technical personnel. Hence, he called on the party to take the lead and support this effort.

From one of degradation during the Cultural Revolution to one of institutionalization in the period of restoration and modernization, the new Chinese leadership has completely reversed the policy of higher learning. They are cognizant of the fact that seeds blown along the way sides and on rocky soil by the cultural wind will have to be replanted and reseeded with proper nutrient. This process will be

painful and tedious for most, but it is a necessity if one is expected to survive and flourish in this new era. The nutrient prescribed is correct but the seeds are just too many. Due to the lack of facilities of the approximately 100 million workers in China, only 500,000 are able to participate in the various education programs.[33] There is no "quick fix" in this growing process as the Chinese will learn.

In a paper presented to the 31st Annual Meeting of the Association for Asian Studies, Chun-Yuan Cheng, a professor of economics and Chairman of Asian Studies at Ball State University, indicated the disability of the Chinese to rapidly absorb modern technology due to the retarded growth of science and technology in China. He cited an article which appeared in the People's Daily in October 1977. It reported that 68 percent of the sample of college graduates given examinations failed mathematics, 70 percent failed in physics and 76 percent failed chemistry. The article further stated that the tests were designed to cover "basic knowledge that high school students should know."[34] Indeed, the Cultural Revolution not only has impeded the growth of the past generations, but has also created an obstacle for the Four Modernizations.

To insure the proper soil for the growth of future seeds, China has reformed its education system through the

revival of competitive examinations for university admission, the resumption of graduate education, the selection of 88 key universities for special attention, abandoned the requirement for labor between middle school and college, reintroduction of the Chinese Academy of Science, and the resumption of high-quality research.[35]

This national effort is augmented with regional endeavors such as the "Jiangsu Plan." Under this proposed plan, measures are being taken in Jiangsu province for the selection of competent personnel through the following means:

- Personnel will be examined in different disciplines and the best qualifed scientific and technical workers will be promoted to higher position.
- Contestsin single subjects (such as mathematics) will be held each year for junior and middle school students. The best qualifed students may enter the colleges without going through competitive college entrance examinations.
- Students who fail to achieve the required marks in the competitive college entrance examinations but are recognized for special skills may enter a university to receive training in the related specialty.
- University students who have talent in a special course may apply for a transfer within the university to study in the related fields.
- Recognized experts should have assistants of their own choice.
- Active measures will be taken to help middle aged and young scientists and technicians to continue their studies abroad. [36]

With the national and provincial aspiration, China has set a goal of training 800,000 new scientific research and technical workers by 1985, and plans have been announced for Sino-American and worldwide student exchange programs, eventually involving 15,000-20,000 students of primarily scientific and technical disciplines.[37] As of January 1980, China has sent over 2,230 scholars and students to 33 countries, to include the son of Vice Chairman Deng Xiaoping, studying as a graduate student in Physics at the University of Rochester in the United States.[38]

The urgency to catch-up in the fields of Science and Technology was well illustrated in a conversation between Vice President Dr. Zhou Peiyuan of the Chinese Academy of Science, and Rep. Lester Wolff, who was on a fact finding mission in China. Dr. Zhou said:

> "In our plan for the development of science and technology, we are also going to undertake more than 100 programs. The 27 spheres include the basic science and also applied science. Among the over 100 programs, eight programs are vital. They have a vital bearing on the development of our national economy. The eight programs are: 1) the research of agriculture; 2) material science; 3) energy; 4) computer science and technology; 5) laser; 6) space science and technology; 7) high energy of physics; and 8) genetic engineering."[39]

These technology acquisition priorities were substantiated by the initial group of Chinese students sent to the United States during the year 1978-1979. (See Table IV-1). In addition to this outflow of knowledge seekers, Chinese Ministry of Education has invited over 370 professors and specialists

TABLE IV - 1

INITIAL CHINESE STUDENTS TO U. S.:
FIELDS OF INTEREST 1978-1979

Physics	58
Radioelectronics	50
Computer Science and Engineering	45
Mathematics	30
Chemistry	30
Medical Science	29
Life Science	25
Material Sciences and Technology	15
Control Engineering	15
Aeronautical Engineering	15
Space Technology	15
Agricultural Sciences	11
Mechanics	10
Nuclear Engineering	10
Construction Technology	10
Metallurgical Engineering	10
Chemical Engineering	10
Mechanical Engineering	8
Meteorology	7
Astronomy and Astro-Physics	6
Other Subjects	24
	433

TABLE IV - 1
(continued)

Source: Committee on Scholarly Communication with the PRC, Notes on Student Exchanges with China, (1 November 1978), pp. 3-6.

Adapted from Richard Baum, ed. China's Four Modernizations: The New Technological Revolution, (Colorado: Westview Press, 1980), p. 170

from 13 countries to lecture and instruct in the various fields of science.[40]

Thus far, the overall accomplishment by the education reforms is only a small step on the long, steep and difficult road ahead. To accomplish the objectives set out by Hu Yaobang, China will have to elevate science and technology to a position of equal importance to that of agriculture and ahead of that of industry. To reeducate the 100 million existing workers and to discipline properly over 214 million students enrolled between middle and graduate schools[41] - more than the total population of the United States and Canada - China will be faced with a task that is unequal in the history of mankind.

It was reported recently because of the shortage of colleges and universities, only 270,000 students were enrolled from a field of 4.6 million candidates in 1979.[42] Lack of properly trained educators, facilities and resources will not enable China to revamp its whole education system for at least 5-10 more years.

E. SUMMARY

In 1979, only $7.65 billion were allocated in the national budget for cultural, education, public health and science.[43] For a country of nearly one billion people, it means only about $7.65 are spent on each

individual for education, health and welfare, and science and research. It is believed that much of this budget goes to scientific research and not to school.[44] Unless the Chinese remedy this situation quickly, scientific and technological improvement will only be escalated on an incremental basis. It is doubtful whether China can absorb large doses of high technology under the present condition. This deficiency will continue to haunt China's modernization effort well into the 1990s. There is no short term solution to this aggregated problem, only temporary response. However, in the long run, once the level of proficiency is gained, China will have unlimited potential. As Hua said:

> "If we popularize science and culture, if we raise the nation's scientific and cultural level and integrate popularization with higher standards, and if we forge links between specialists and laymen, we can certainly form a huge army of scientific and cultural workers and quicken the tempo of our advance." 45

FOOTNOTES

1. San Francisco Chronicle, 25 February 1980.
2. Harlan Jencks, Modernization of the People's Liberation Army, a lecture presented to the Asian Seminar Students at the Naval Postgraduate School, 14 December 1979.
3. Nelson, p. 18.
4. DIA, Handbook, p. 5-19.
5. Nelson, p. 19.
6. New York Times, 4 January 1980.
7. FBIS-PRC, 18 October 1979, p. L-16.
8. Far Eastern Economic Review, 9 November 1979, p. 24.
9. Ibid.
10. Ibid.
11. Ellis Joffe and Gerald Segal, "The Chinese Army and Progressionalism," Problems of Communism, November-December 1978, p. 14.
12. Asia 1980 Yearbook, p. 35.
13. Beijing Review, No. 41, 12 October 1979, p. 4.
14. Ellis Joffe, Party and Army: Professionalism and Political Control in the Chinese Officer Corps, 1949-1964 (Cambridge: Harvard University Press, 1971) p. ix.
15. Harlan Jencks, The Politics of Chinese Military Modernization 1945-1947 (Ph.D. Dissertation, University of Washington, 1978), Vol. II, p. 589.
16. DIA, Handbook, p. 5-30.
17. Far Eastern Economic Review, 9 November 1979, p. 24.
18. JPRS, China Report, 74147, 7 September 1979, p. 6.
19. Joffe and Segal, p. 13.

20. Far Eastern Economic Review, 9 November 1979, p. 24.

21. Joffe and Segal, p. 12.

22. Far Eastern Economic Review, 9 November 1979, p. 24.

23. Ibid.

24. FBIS-PRC, 8 April 1980, pp. 2-3 (Annex).

25. Beijing Review, No. 10, 10 March 1978, pp. 27-30.

26. Beijing Review, No. 32, 10 August 1979, p. 8. Note: The work-study program involves mainly primary and middle school students. With the understanding that their education has top priority, they are required to do a certain amount of manual labor in the school, run factories or farms. According to the Beijing Review, the purpose of this program is to combine study with productive labor and "scientific experiment" to help broadening the students' scope of knowledge.

27. Beijing Review, No 35, 31 August 1979, p. 8. Note: Spare-time schools are run by factories and mines at the grassroots level or by the trade unions at higher levels. The purpose of this program is to raise the cultural level and technical and managerial skills of the workers and staff, thereby increasing the productivity of these enterprises. The subjects they study range from general knowledge for beginners, politics, enterprise management to science and technology.

28. Beijing Review, No. 47, 23 November 1979, p. 9. Note: Television Colleges are a new phenomenon in China. About 6,000,000 people are attenging, more than double the number of college students enrolled this year.

29. Beijing Review, No. 37, 14 September 1979, pp. 7-8. Note: The enrollment of students in technical schools had declined drastically in proportion to that of middle schools. According to statistics for Beijing and Tiajin, the ratio between students in senior middle schools in both cities in 1965 was about one to one. In the first half of 1979, the ratio was 12 to 1 in Beijing and 5 to 1 in Tianjin. Figures issued by the State Statistical Bureau last year indicated there were 65.48 million junior and senior middle school students in the country, but only 880,000 in technical schools.

30. Beijing Review, No. 7, 18 February 1980, p. 27.

31. Richard Baum, ed., China's Four Modernizations: The New Technological Revolution (Boulder: Westview Press, 1980), p. 38.

32. Beijing Review, No. 15, 14 April 1980, pp. 13-16.

33. Beijing Review, No. 7, 18 February 1980, p. 27.

34. Cheng, pp. 12-13.

35. Jencks, Politics of Chinese Military Development, p. 572.

36. Beijing Review, No. 9, 3 March 1980, pp. 3-4.

37. U. S., Congress, House, A New Realism: Factfinding Mission to the People's Republic of China, July 3-13, 1978, Report by the Subcommittee on Asian and Pacific Affairs, 95th Congress, 2nd Session, 1978, p. 7.

38. Far Eastern Economic Review, 1 February 1980, p. 5. Beijing Review, No. 47, 23 November 1979, pp. 7-8.

39. U. S., Congress, House, A New Realism, p. 44.

40. Beijing Review, No. 11, 17 March 1980, p. 9. Note: It covers the areas of physics, chemistry, industrial chemistry, electronics, metals, construction, high-energy physics, psychology, pedagogics, economics, law, foreign literature and linguistics.

41. Beijing Review, No. 1, 7 January 1980, p. 18: Asia 1980 Yearbook, p. 161. Note: It is estimated there are 213 million students enrolled in schools in 1978. Breakdowns are as follows:

Institutions of higher learning	850,000
New enrollment in institutions of higher education	400,000
Students in secondary technical schools	880,000
Middle school students	65,480,000
Primary school pupils	146,240,000
	213,850,000

This figure does not include students and workers enrolled in factory-run colleges and spare-time universities and kindergarten children.

42. Beijing Review, No. 41, 12 October 1979, p. 6.

43. The China Business Review, July-August 1979, p. 45.

44. San Francisco Chronicle, 25 February 1980.

45. Beijing Review, No. 10, 10 March 1978, p. 31.

V. THE MILITARY INDUSTRIAL COMPLEX: DATED TECHNOLOGY

A. TECHNOLOGICAL SOPHISTICATION - MIXED INDICATIONS

In a recent editorial appearing in People's Daily, the modernization of science and technology was defined as the "Key" and the "Central Link" of the Four Modernizations.[1] It is certainly true that technology is extremely important to the modernization effort. Like the needs of a strong economy and stable political environment, technology is an integral part of a host of variables that are interdependent of each other, and they are all essential to the total modernization effort.

China has made substantial progress in the last five years toward its goal of modernizing its armed forces. Even though the technology possessed by China are known to be 10 to 15 years behind the United States and the Soviet Union, its technology still represents a very significant capability and it must not be ignored.

It is very difficult to assess exactly what level of sophistication and technology is possessed by the Chinese due to the different emphasis and priority placed on different military industrial developments. For example: China has the capability to launch a strategic nuclear ICBM

missile, yet it does not have the ability to produce a high-performance jet engine. Although it is a holder of nuclear submarine technology, still the Chinese are producing outdated 1950s vintage tanks to field its army.

It is the essence of this chapter to determine the level of technology that has been achieved by the Chinese in its earlier developments, and it will explore the technological gaps and time required to achieve the modernization of military industry.

B. EARLY MODERNIZATION EFFORTS - IN RETROSPECT

With the signing of the Treaty of Friendship, Alliance and Mutual Assistance, in Moscow on 14 February 1950, and the reluctant entry of the Chinese "volunteers" in the Korean War,[2] the Soviet's were quickly forced to come to the aid of the unprepared and ill equipped Chinese forces.

Unlike the well equipped North Korean Army, the PLA - under the name of the "Chinese People's Volunteers" were the same tough but poorly equipped infantrymen who had defeated the Japanese and the Nationalists. According to Ellis Joffe, the Chinese were still armed with rifles and small quantities of automatic weapons of various calibers, which they had captured in the earlier wars. They had little artillery and virtually no armor or air support. Standardization of equipment or organization was virtually

nonexistent. Due to the variety of sources, the Chinese found themselves in possession of an international arsenal; this further complicated the already weak supply system by creating additional difficulties in supply of ammunition.[3]

Under the Soviet Military Assistance Program, the Chinese army began its initial modernization effort to reequip all its forces by taking advantage of the "protracted" truce negotiations.

It was reported the 1951 military expenditures reached 48 percent of the Chinese budget. The once nonexistent PLA Air Force had reached an estimated strength of 2,480.[4] By late 1952, the PLA infantry divisions no longer resembled the light division that had crossed the Yalu in October 1950. Ultimately, China became the recipient of one of the biggest arms sales in modern history. Between 1950 and 1957, China accrued approximately $2 billion of debts. It was reported in China in 1953 that money was collected from school children to defray the ever growing military expenditures.[5]

The dependency on the Soviet arms diminished toward the late 1950s when the Chinese began to receive Soviet assistance in creating the Chinese military industrial complex. This included the partial construction and assembly of jet fighter aircraft, complete construction of light piston aircraft, and construction of tanks, small patrol boats and submarines.[6] China received what most have come to

refer to as "the most comprehensive technology transfer in modern history." Basically, it is this same military industrial complex of the 1950s that the Chinese are operating on today.

Presently, there are over 400 defense industry plants in China producing everything from small arms to plans and missiles. These plants are spread among the eleven military regions with heavy emphasis in Northeast China. There are 78 defense industry plants in the Beijing military region, 69 in Sheyang (Manchuria), 52 in Nanjing, 50 in Chengdu, 45 in Lanzhou, 34 in Guangzhou (Canton), 33 in Wuhan, 29 in Kunming, 14 in Fuzhow, eight in Jinan and one in Xinjiang.[7]

The development of the Chinese military industrial complex has been that of a "roller coaster" effect. This erratic behavior has been the results of the struggles between the "self-reliance" and "moderate" schools. Since the break with the Soviet Union in 1959 and the withdrawl of the Soviet technical assistance in 1960, the Chinese have been hesitant to rely on any one supplier. The philosophy of "self reliance" has dominated the theme of modernization throughout the past ten years - surpassed by the "moderate" school only after the failure of the former school.

In the mid-1960s, just a few years after the unsuccessful attempt of the Great Leap Forward, there was a big increase

in purchases of technology and a number of complete plants were ordered; this time from the West. Almost immediately after the resumption of technology transfers, the Cultural Revolution broke out. During this period of unrest, acquisition of modern tehnology decreased markably. Between 1966 and 1972, purchases of complete plants were ceased entirely. After the Cultural Revolution, Chinese imports of machinery and plants were again on the rise. In 1973, the dollar amount of whole plant contracts reached $1.2 billion mark. With the steady increasing control by the "Gang of Four," the emphasis on technology was reversed back to indigenous production. This was climaxed with the death of Zhou and Deng Xiaoping, an advocate of the "Four Modernizations," was purged in April 1976. Shortly afterwards in September, Mao died, and the Gang was arrested. Again, imports of technology and plants were on the rise. By 1978, it had reached an all time high of $6.9 billion.[8] The trends of these imports can be seen in Table V-1. It must be noted that most imported machinery and whole plants are devoted to the development of an infrastructure, the network of support function, such as coal and electric power, transport, communication and electronic, iron and steel. These supporting elements are prerequisites for the development of military industries.

A closer examination of the imported technologies revealed the Chinese fragility in the fields of electronics,

TABLE V - 1

CONTRACTS FOR WHOLE PLANTS IMPORTS

(values in $ million)

	1963-65	1966-72	1973	1974	1975	1976	1977	1978
Petrochemicals			698	114	90	136	39	3325
Iron and Steel				551		40		2978
Fertilizer			392	120		8		
Coal and Electric Power			161	46				202
Transport					200			79
Communication and Electronics								217
Non-ferrous Metals								127
Manufacturing			8		74	1	21	6
Petroleum and Gas							20	
	167	0	1259	831	364	185	80	6934

Sources: CIA, International Trade Handbooks, September 1974

Richard Baum, ed. China's Four Modernizations: The New Technological Revolution, 1980

Christopher Howe, China's Economy, 1978

chemicals, engineering and metallurgy which require great needs for precision and quality control - especially in defense productions. It has been reported by foreign specialists with access to China that average technology in electronics, machine tools, iron and steel, and aircraft industries is seven to twenty years behind Western standards.[9] In General Brown's military posture report, it noted the principal growth in China's military production has been in the aerospace industry. It is believed that China is working toward technological independence in this high technology area, as seen through their current drive in the development of Intercontinental Ballistic Missile System.[10]

One must not be deceived solely by the success in the development of nuclear and strategic delivery systems, and to conclude that China has arrived or will soon arrive at the stage of technological independence. On the contrary, as indicated earlier, there are some extreme imbalances within the Chinese military development and production technologies. With the current plan, it is clear that China will not be able to achieve parity with the U. S. or Soviet Union in military capability by the end of the century - it is unlikely that China can achieve even second-power status unless it can take drastic and probably costly measures in the next 20 years to improve the military infrastructure.

C. RECENT DEVELOPMENTS - REVERSE ENGINEERING

The Chinese leadership is aware of this major deficiency and has been trying to overcome this "roller coaster" effect by integrating the "self reliance" and "moderate" schools - with emphasis on "self reliance." This integration effort was well illustrated in an editorial appearing in an October 1978 issue of the Beijing Review:

> China's production techniques in industry still remain at the level of the 40s and 50s. Labor productivity in our iron and steel industry is well below that of the best abroad. In the newer industries, the disparity is much greater. We acknowledge our backwardness so as to swiftly change our backwardness. And how are we to bring this about? Mainly by relying on our own efforts and at the same time extensively importing advanced technology that is good from abroad . . . Importing techniques and equipment does not mean abandoning "maintaining independence and keeping the initiative in our own hands and relying on our own effort." On the contrary, it is strengthening our ability to stand on our own feet. [11]

This attitude was again reflected recently in the much regarded Report on the Current Situation and Tasks by Deng Xiaoping:

> China is such a big socialist country, but it is impossible for China to take this kind of "shortcut." (complete foreign dependence) We must also make use of foreign capital and technology and energetically develop foreign trade. However, we must emphasize self-reliance. [12]

The present regime is acutely aware of this costly technology and reliance dilemma, and it has been trying to formulate a pragmatic approach to the importion utilization

of foreign technology which does not antagonize excessively with the traditional school. Self-reliance is now being promoted as the main theme, complemented with foreign melodies. This was substantiated by Secretary Brown in his recent trip to China. After meeting with top Chinese officials, he commented, "China can neither afford the financial cost of fully equipping their military with arms purchased from other countries, nor can they afford to be dependent on others." He further elaborated, "what they have in mind is to buy enough to learn how to make their own."[13]

In the past China has been known to gain foreign technologies through the method of "reverse engineering." This self-reliance process of acquiring foreign equipment, stripping it down and copying it, has lengthened the process of reproduction and created substandard performance equipment. The first reported major undertaking was the development of the Soviet MIG-21. Without the benefit of license and Soviet technological assistance, China began its development of an "acquired" Soviet MIG-21 in the 1960s.[14]

It was reported that approximately eight years were spent in setting up the production plant in Chengdu, Sichuan. However, due to the difficulties encountered in metallurgy, aircraft produced were badly underpowered and lacked the thrust of a high yield and sophisticated single engine MIG-21. This ill-conceived effort produced only 50 to 80 MIG-21s, and the production was all but ceased by 1975.[15]

Another possible major "reverse engineering" project was revealed by a recent foreign visitor to China. He indicated that the Chinese are building a copy or derivative of a Boeing 707 jetliner - product of a 1954 technology - in a plant on the outskirts of Shanghai. He further stated that the aircraft had been fitted with four Pratt and Whitney engines identical to those used in ten Boeing 707s China bought after the Nixon visit to Beijing in 1972. In addition, he cited that the plane had just completed the structural test and has yet to be taxied or flown.[16]

Although the Chinese have denied that the jet transport plane being built is a copy of the Boeing 707, and it is of a Chinese design,[17] one cannot dismiss the fact that 40 extra engines were purchased by the Chinese at the time of the Boeing sale. According to aircraft executives, this amount of replacement engines were far more than would ordinarily be needed.[18] Since the Chinese have not openly denied the uses of the Pratt and Whitney engines, they did little to discredit the report. If this report is accurate, it means the Chinese still have not attained the metallurgy to produce the light weight, heat resistant metals required for modern jet engines.

Without the benefit of foreign technological assistance, the Chinese have taken almost a decade to copy and yet to reproduce a possible prototype aircraft of a 1950s vintage.

This lengthy "research and development" process by reverse engineering could be the last major attempt in acquiring foreign technology without foreign support.

Production of high technology and sophisticated equipment is by no means a small task - even with foreign technological assistance. Retooling from basically a 1950s and 1960s to one of 1980s defense industries will be a herculean feat. The tremendous development and production costs that have to be borne by the economy; microminiaturization of electronic and computer sophistication required for most modern military hardware; metallurgy needed to produce light weight, heat resistant metals necessary in aerospace industry; thorcughly trained and highly qualified technicians and scientists; the much needed time; a well balanced and developed infrastructure; and many other variables needed are beyond that of most third world nations. Although China's relative position is between that of a third and second world nation, many facets of their technologies are still that of a third world nation.

Michael Moodie noted that the development of infrastructure in a third world defense industry will generally be in seven lengthy stages:

1. Maintenance and overhaul facilities are established for the service and repair of imported arms.

2. Licenses are negotiated for the domestic assembly of a particular system, and unassembled kits are put together.

3. Simple components are domestically fabricated under license while sophisticated components, such as engines and electronics, continued to be imported. At this stage, the third world producer can begin to earn some foreign exchange by selling components or finished systems back to the licensor or elsewhere.

4. The developing country decreases the number of components for a given system that must be imported and a point is then reached which the third world state can be said to be producing the entire system under license.

5. Components for weapons systems are designed locally and incorporated into existing systems.

6. Production of domestically designed systems is begun, initially using some imported components embodying more sophisticated technologies beyond the capability of the third world producers.

7. Indigenously designed systems incorporating no imported components are manufactured. 19

This step-by-step process by which using the infrastructure and experience acquired at one stage as a building block to move onto the next will take years - depending on the level of existing technologies and infrastructure. In addition, this process by which to increase domestic defense production through foreign assistance can often be easily led into an interminable dependency on foreign technology. By the time it has reached the final stage, self reliance, the equipment will likely be made obsolescent by further advancement in the second and superpowers. In order not to fall behind,

state-of-the-art weapons or equipment have to be procured, which requires a new series of dependencies upon the suppliers.

Take the case of the Spey engine. Between 1975 and 1976, China had purchased 50 Rolls Royce Spey 202 jet engines from Britain and the rights to manufacture them under license from kits, with British technicians as advisors to assist and oversee the proejct.[20] This was the first major coproduction package involving high technology transfers between China and a developed nation. With this assistance, China began its development and production effort at the second stage of Moody's chain.

The Spey 202 engine, a product of the 1960s, was the power plant used in the British version of the McDonnell-Douglas F-4 Phantom fighter-bomber. It has the capability and was designed for a Mach 2 aircraft. Although it is not clear what purpose the Chinese had designed for the Spey engine, it has been alluded that the Chinese are building a modified or a derivative of Soviet MIG-23 jet fighter acquired by the Chinese through the Egyptians, and the Spey engine would be used as the power plant for this aircraft.[21]

It has been five years since the inception of this coproduction program, and the Chinese have yet to produce the first series of this engine. According to the latest report, the Chinese have only produced two prototypes and

they are still in the testing stage.[22] The F-4 fighter, which the Spey engine was used by the British as its main power plant, has already been outmoded by the new generation of sophisticated aircraft, the F-15 and F-16. If the Chinese can absorb this new gained technology from the Spey engine and promptly put it into application, they will still be years behind the superpowers. It is not surprising to note that Vice Premier Deng Xiaoping has expressed to the U. S. Senate Foreign Relations Committee visiting China in mid-April 1979, that China was interested in both the McDonnell-Douglas F-15 and the F-16 jet fighter of General Dynamics[23]- signs of interminable dependencies on foreign technology.

D. SUMMARY

Production of advanced weapons systems and equipment will remain to be a major obstacle for China in the coming decades. Technologies in the critical areas of defense industries such as metallurgy, engineering, electronics and chemical are far behind those of the developed nations and superpowers. To develop, build, and train a modern military industrial complex will be very time consuming and difficult; but, without it, China will not be able to support a modern armed force. With the new attitude expressed by the present regime, the much needed foreign technologies are being

transferred at an unprecedented scale. Theoretically, China should be able to gain ground and narrow the technology gap with the developed nations and superpowers through massive technology transfers. Many developmental stages and "reinvention of the wheel" can be avoided. However, quantum jumps can only be made when the technologies are assimilated by the society and developments in all critical areas are balanced. This "protracted" process is unlikely to narrow the gap significantly by the end of this century.

FOOTNOTES

1. FBIS-PRC, 10 April 1980, p. L-12.

2. According to the analysis completed by Dr. Allen Whiting, it indicated the lack of planning and participation by the Chinese in preparation for the initial conflict. It was not until the late summer of 1950 before the Chinese began to build up for its possible participation in it. The analysis also indicated the hesitance and reluctance on the part of the Chinese for its final commitment. For complete details, see Allen S. Whiting, China Crosses the Yalu (Stanford: Stanford University Press, 1974), p. 34-122.

3. Joffe, Party and Army, pp. 10-11.

4. Raymond L. Gartroff, "Sino-Soviet Military Relations," The Annals of the American Academy of Political and Social Science, September 1963, p. 85.

5. Ibid.

6. Ibid.

7. Gregory R. Copley, ed., Defense and Foreign Affairs Handbook: 1976-1977 (Washington: Copley and Associates, 1976), p. 93.

8. Baum, pp. 157-162; Christopher Howe, China's Economy, (New York: Basic Books, Inc., 1978), pp. 134-138.

9. Howe, p. 130.

10. Brown, p. 104.

11. Beijing Review, No. 41, 13 October 1978, pp. 11-12.

12. FBIS-PRC, 11 March 1980, p. 15 (supplement).

13. Newsweek, 21 January 1980, p. 51.

14. The Soviet Union has claimed that one or more all-weather MIG-21s were stolen by China while transiting that country enroute to Vietnam. It is not clear if these were the same aircraft used by the Chinese in their own production.

15. Nelson, pp. 163-165; Liu, p. 58; and Far Eastern Economic Review, 7 March 1980, p. 62.

16. Monterey Peninsula Herald, 11 May 1980; Far Eastern Economic Review, 7 March 1980 p. 62. Note: It was reported in the San Francisco Chronicle on 17 February 1980 that the Chinese are building at least two prototype jet aircraft similar to the U. S. Boeing 707, and taxiing trials have started in Shanghai.

17. Monterey Peninsula Herald, 16 May 1980.

18. Monterey Peninsula Herald, 11 May 1980.

19. Stephanie G. Neuman and Robert Harkavy, eds., Arms Transfers in the Modern World, (New York: Praeger Publishers, 1979), p. 299.

20. Far Eastern Economic Review, 7 March 1980, p. 64.

21. Ibid.

22. COMMIL: The Defense Monthly, January 1980, p. 15.

23. JPRS, China Report, 74396, 17 October 1979, p. 78.

VI. AVAILABILITY OF ARMS SUPPLIERS

A. MODERNIZATION OF THE MILITARY - ARMS TRANSFERS

"The whole world estimates that the 1980s will be a dangerous decade," said Deng Xiaoping, in his recent report on the current situation and tasks at a cadre conference. General David Jones, Chairman of the Joint Chiefs of Staff, predicted, in his military posture statement last year, that the 1980s will be a period "of widespread international turmoil and instability." At a recent meeting of defense and foreign ministers of the Atlantic Alliance at North Atlantic Treaty Orangization (NATO) headquarters, the Defense Planning Committee of NATO reported, "We are entering a period of high risks." President Carter, as a candidate in 1976, repeatedly called for a cut of $5 to $7 billion in the defense budget, concluded that the early 1980s were especially dangerous, and he proposed a 4.5 percent annual real dollar increase in military expenditure for the next five years. These proclamations were the results of intimidation by the nemesis of world peace - growing Soviet military prowess and its unconstrained ability to project its might.

Amidst this international security awareness, the European security alliance has gained a new "anonymous

partner" in arms - the People's Republic of China. In reality, China has been an "anonymous partner" for over a decade - ever since the Sino-Soviet confrontation at Chenpao Island in 1969. At present, China is tying down approximately 46 Soviet divisions with sizeable complement of artillery, armored forces, tactical air support and a force of short range nuclear missiles. This represents about one-quarter of the total Soviet forces.

It can be seen easily that any lessening of tension in the Sino-Soviet relation could well mean more available Soviet froces to be redeployed to the European and/or Middle East theaters, thereby increasing the possibility of a Soviet attack in these volatile areas. Evidently, with its "anti-hegemony" foreign policy directed against the Soviet Union, China is an important silent partner in the maintenance of world stability in the 1980s. Therefore, it is in the interest of the Western alliance to assist in the modernization of the Chinese armed forces to offset the favorable balance maintained by the Soviet Union, and to employ this relationship with China as a means of influencing Soviet action. However, a school of thought has emerged with the premise that sophisticated military arms and technology transfers to China will antagonize the Soviet Union and result in a serious deterioration of Soviet-West relations and could trigger a Soviet phobic reaction - a preemptive strike on China.[1]

It is the purpose of this chapter to examine the effect this dilemma has on China's ability to acquire sophisticated arms and technology, and the availability of willing arms suppliers to support the Chinese modernization program.

B. AVAILABILITY OF SUPPLIERS

Although it was suggested in the previous chapter that the Chinese cannot afford either the cost of equipping their military with arms from other countries or dependence on other countries for weapons, the Chinese have not lessened their interest in the purchase of critical and the much needed high technology weapons for its immediate national defense.

The purchase of foreign arms and technology has begun during the mid-1970s, with the purchase of the British Spey engines and the French helicopters. Throughout 1978 and 1979, Chinese military delegates were appearing in Europe and the United States "browsing" for modern arms and technology. Their interests ranged from the French MILAN anti-tank guided missile to the F-16 jet fighter of General Dynamics. Their shopping trips had taken them to the United States, Great Britain, France, Italy, West Germany, Sweden and Yugoslavia, climaxed with Chairman Hua Guofeng's four nation tour of Western Europe in late 1979. However, these top official visits had yet to produce any major purchase of

modern high technology weapons. The interest and purpose of these military delegations had intrigued and puzzled many Western analysts.

Angus Fraser, who has written and lectured widely on Asian political-military affairs, studied these "browsing" sprees through some 85 reports from 23 separate press and journal sources, together with several interviews of recent visitors to China.[2] The results of his study were astonishing. (See Table VI-1).

Over 70 percent of the items listed were basically defensive type of weapons and equipment, with the British Vertical and short Takeoffs and Landings (VSTOL) Harrier jet fighter as the single most frequently mentioned item. It seems as the Chinese had placed the matter of defense as a top priority in acquisition of weapons and equipment. Although this was not without Soviet influence. Due to the Soviet "pressure", most of the prospective European suppliers were apparently only interested to sell what they considered as defensive weapons.

Francis Romance, Senior China Analyst at Defense Intelligence Agency (DIA) discussed four probable motivations of these visiting Chinese military delegations. First, Romance indicated that these visits could be useful to expose the senior Chinese military leaders to modern high technology weaponry of the West and to "shock" the

TABLE VI - 1

TYPES OF WEAPONS, EQUIPMENT AND TECHNOLOGY IN WHICH CHINA HAS EXPRESSED INTEREST SINCE 1 JANUARY 1977

Whole aircraft (26) and spares	34.1%
Anti-tank weapons	17.6%
Shelter, nuclear attack	9.5%
Anti-submarine warfare gear	7.1%
Computers with military applications	5.9%
Reconnaissance and communications satellites	5.9%
Anti-aircraft weapons	4.7%
Tanks and Armed Personnel Carriers	4.7%
Nuclear weapons and missiles	3.6%
Naval engines	2.3%
Submarines	1.2%
Equipment for ships of over 10,000 tons	1.2%
Laser applications	1.2%
Bridging equipment	1.2%
	100.1%*

* Discrepancy due to rounding

Source: Angus M. Fraser, "Military Modernization in China," Problems of Communism, September-December 1979, p. 40.

military leaders into realization of China's military backwardness. Second, these trips could be served as a tool to acquire the much needed information on the technical specifications of the weapon systems they have observed. Third, through the performance aspects of the weapons, the Chinese could presumably gain some appreciation for modern Western doctrine relating to their employment. Fourth, these window shopping expeditions could be served as a vehicle to further its anti-Soviet world-wide United Front Policy.[3]

These trips by the Chinese military delegations have ended with various hypotheses and speculations from Western analysts, and left behind many confused arms suppliers. In reality, besides the Secretary of Defense Harold Brown's announcement that the United States was prepared to sell China a dual-capacity (civilian and military) Landsat surveillance satellite ground station,[4] the Chinese have not made any significant purchase of Western weapons systems. Although it has been suggested that the purchase of British Harrier jet fighter and the French MILAN and HOT anti-tank guided missiles are imminent, the actual purchases have yet to be announced to date. It is evident, however, the Chinese have gained the much needed knowledge, the awareness of their own backwardness, and the appreciation of Western technology and military strategy.

Whether the Chinese major interests lie in the defensive type weaponry or their motivations had remained one of "browsing," further analysis has indicated that the Chinese have basically confined their window shopping sprees to three of the four world's largest arms suppliers - Great Britain, France and the United States.

C. THE EUROPEANS - BRITISH AND FRENCH

1. British

Being the first major European nation to recognize the People's Republic of China upon its inception, the British have had a lengthy relationship with China. Being an island nation, Britain is very dependent on its international trade. In a study by U. S. Arms Control and Disarmament Agency, British total exports accounted for 19.1 percent of its GNP in 1976. While the United States, the world's leading trading nation, accounted for only 6.8 percent, and the Soviet Union accounted for only 3.7 percent of its GNP for 1976.[5]

The British arms and transfer policy is dominated by economic and industrial reasons. Meaning that the domestic market is too limited for the military industrial complex to be cost effective. Consequently, exports of arms play an important role in the survival of the national

defense production line.[6] The competition for export market has been so vital to the British that it has been known that the British forces were to make do with obsolete equipement while the most modern items went to meet export orders.[7]

In December 1975, the British ignored a recommendation from the China Coordinating Committee (COCOM) and concluded the sale of Rolls Royce Spey engines with China,[8] and represented the first major military technology transfer between Britain and China - a communist nation. Presently, under the tutelage of the anti-Soviet crusader, Margaret Thatcher, the British government is probably one of the best hopes for the Chinese to obtain high technology weapons and equipment to counter their common adversary. This cooperation in the past (Spey engine) was probably also a major consideration for the Chinese in choosing the VSTOL Harrier attack fighter.

This versatile aircraft, capable of vertical and short takeoffs and landings would be particularly useful to the Chinese because it requires no airfields. It is especially suitable for use along the Sino-Soviet border, where it could be easily positioned and concealed on the ground. Although it probably represents a logistical nightmare, and the aircraft has been known for its maintenance and safety problems through the experiences of the

U. S. Marines, this highly regarded defensive aircraft still represents a state-of-the-art technology that is unmatched in the Chinese inventory.

Although the final purchase has yet to be announced, it has been reported that the negotiations have resulted in a "stripped" export model in which the aircraft will not be equipped with inertial navigation systems or offensive attack systems. Also, it has no laser rangefinder or any kind of fire control system in its armament.[9] Other reports indicated that China has scaled down its purchase plans and it is only interested in buying one or two Harriers and then reproducing it indigenously.[10] Whatever the outcome, the conclusion of the Harrier sale to China would mean the British had taken another step in worsening their relations with the Soviets and the Chinese could improve their unfavorable military balance against the Soviets. As Lawrence Freedman indicated, "sales to China would represent one of the few examples of the use of arms sales as a positive instrument of foreign policy by the British."[11]

Aside from the Harrier deal, the British had initiated another first in their capturing of the China market. On 26 March 1980, with British Secretary of State for Defense, Mr. Frances Pym, presiding over the opening ceremony, British companies opened a military aviation exhibit in Shanghai. It was the first British national

exhibit of aerospace products in China and was the largest such British exhibition outside Europe. Equipment ranged from full size Rolls Royce engines to large scale models of aircraft, helicopters and space stations.[12] It is evident that Britain will continue to be an aggressive arms supplier and will probably play a major role in the modernization of the Chinese armed forces.

2. French

With assistance and aid from the United States after World War II, France has slowly regained its position as a major arms producer and supplier. Like many aspects of Britain, France was among the first to extend recognition and establish diplomatic relations with Beijing, and its economy also depends heavily on international trade. In 1976, France's total exports accounted for 15.4 percent of its GNP. second only to Britain and among the top four arms suppliers.[13]

Like the British, French arms transfer policy is heavily influenced by economic and industrial reasons as principal motivations. In order to maintain an advanced domestic armaments base to ensure their independence from the super powers, it is necessary to export large quantities of arms in order to reduce the cost of new weapons by diffusing research and development expenditures over a

large number of units. It was estimated in 1976 that of the 170,000 workers in France's armaments industry, 75,000 or almost 28 percent were engaged in the manufacture of arms destined purely for foreign sale.[14] Consequently, exports of arms not only play an important role in maintaining the life of the military industrial complex, but also the balance of payment and economic survival.

Similar to the British Spey engine venture in China, the French conducted its first military sale in the mid-1970s with the sales of French Frelon helicopters. Since then, the Chinese have shown considerable interest in the purchase of the French Dassault - Breguet company's "Mirage 2000" F-1 fighters, a sale the French government feared would harm its relations with the Soviet Union.[15] Thus far, the French have made known that they are only prepared to supply defensive weapons. This bowing to the Soviet pressure is a departure from the French arms transfer policy, and it represented a rare example in which the French government subordinated its economic concern to political reasons.

Other French arms deals included the much discussed purchase of French MILAN and HOT anti-tank missiles, as well as anti-aircraft missiles. These were originally discussed by the Prime Minister M. Raymond Barre, on his visit to Beijing in January 1978. However, like most

commercial contracts, these arms deals have been frozen when moratorium was imposed on all contracts due to economic "readjustment."[16] The faith of these contracts will not be known until the Chinese leadership can hammer out its priorities.

As a nation, France was known for its independence in foreign policy and actions. As an arms supplier, France was known as a merchant whose strategic and foreign policy objectives were subordinated to arms sales. The Mirage jet fighter deal with China marked a shift in French arms transfer and foreign policy, and the emergence of a triangular relation of Paris, Moscow and Beijing. Whether the shift would be diverted back to its old track will depend on the cost effectiveness of the Franco-Russo economic and political relations vis-a-vis the Sino-Franco's relations.

Frances's willingness to sell the MILAN and HOT anti-tank missiles demonstrated its determination in achieving the maximum utility value of this triangular relation. The essence of the future Sino-Franco relations will probably depend on the attractiveness of the Chinese market, and if the Chinese are able to lure the French away from the Soviets.

D. THE AMERICANS

1. U. S. - China Relations

Modern Sino-American relations may best be compared to that of the pendulum swing. During World War II, at the height of the swing, the two nations fought along side each other against the Japanese. After the conclusion of World War II, the United States became the unsuccessful mediator in the Chinese Civil War in which the Nationalist was finally defeated and communist China was brought into being in October 1949. During the post-war era, one found the two nations were differed in the Taiwan matter. As the pendulum continued its down swing to the left, the two nations found themselves diametrically opposed in the Korean Peninsula. Again, in the 1960s, they were found on the opposite sides of the Vietnam War. The Sino-Soviet confrontation in 1969, the end of the Cultural Revolution, and the inauguration of a new administration in the White House had slowly assisted in oscillating the pendulum back to the right. During this continued upswing, military confrontation and ideological differences gave way to peace and stability. With the exchange of recognition and diplomatic relations in January 1979, the Sino-American relation has inched toward a new height in the atmosphere of detente and rapprochement.

2. U. S. Arms Transfer Policy

Since 1973, a major shift has taken place in the nature of U. S. arms transfers from arms aid under the Military Assistance Program (MAP) to arms sales under the Foreign Military Sales Program. In a study prepared for the House Armed Services Committee, it was estimated that by fiscal year 1981 a ban on Foreign Military Sales (FMS) Program would lead to a lower current dollar GNP by approximately $20 billion, and total loss of employment would be about 350,000 jobs or 0.3 percent higher in the unemployment rate.[17] The impact of FMS has on domestic employment, the gross national product and the whole economy is indicative of its importance. Yet, unlike the French and the British which fall into the "economic" category, the United States as the leading arms supplier in the world, belongs in the "hegemonic" (searching for security or partial influence) category, along with the Soviet Union.[18]

In an effort to curb the ever growing arms exports, presidential candidate Jimmy Carter spoke out against the size and direction of U. S. arms transfer. He said, "The United States could not be both the world's leading champion of peace and the world's leading supplier of the weapons of war."[19]

As President Carter in 1977, he announced a six-point restraint arms sales program:

> •The dollar volume (in constant Fiscal Year 1976 dollar) of new commitments under the Foreign Military Sales and Military Assistance Programs for weapons and weapons-related items in Fiscal Year 1978 will be reduced from the Fiscal Year 1977 total . . . and will be reduced in Fiscal Year 1979 from the total in Fiscal Year 1978.
>
> •The United States will not be the first supplier to introduce into a region newly-developed, advanced weapons systems which could create a new or significantly higher combat capability. Also, any commitment for sale or coproduction of such weapons is prohibited until they are operationally deployed with U. S. forces . . .
>
> •Development or significant modernization of advanced weapons systems solely for export will not be permitted.
>
> •Coproduction agreements for significant weapons, equipment and major components . . . are prohibited . . .
>
> •. . . the United States, as a condition of sale for certain weapons, equipment or major components, may stipulate that we will not entertain any requests for retransfers . . .
>
> •An amendment to the International Traffic in Arms Regulations will be issued, requiring policy level authorization by the Department of State for actions by agents of the United States or private manufacturers, which might promote the sale of arms abroad. In addition, embassies and military representatives abroad will not promote the sale of arms . . .[20]

The President further pledged that the Administration would seek the agreement of other large arms exporters in holding down world wide sales. However, Britain and France rejected the Administration's proposal, and negotiations

with the Soviet Union on limited arms exports to third world countries ended in failure in December 1978.[21]

In January 1980, President Carter announced his support to build a new American jet fighter, known at this stage as the FX, solely for export. "President Carter's decision to allow development of a new fighter plane for sale to foreign countries means his policy of restraining arms sales is dead," said Sen. William Proxmire. He further states, "From here on out, it's back to the old sell anything to anyone at anytime policy."[22]

This new policy represents a major modification of President Carter's stand on arms sales restraint. It is not known at this time if the President's efforts to constrain arms sales has given way under the pressure of arms manufacturers or to use this new policy among others to counter Moscow's recent actions in Afghanistan. It is difficult to perceive if this action would affect arms transfer to China in light of the Sino-American rapprochement.

3. U. S. Arms Transfer Policy in Relation to China

The U. S. arms transfer policy toward China has also seen a continuous modification since the initial thaw of the Sino-American relations in 1972. The U. S. position toward the allies was changed from one of "extreme

opposition" to "silent acquiescence" and presently one of "voiced encouragement" in conducting arms sales to China. Although U. S. arms sales policy toward China has remained that of "no sell," the sales of U.S. commercial technology has taken a jump. After the Nixon trip to China in 1972, Boeing announced its sales of ten Boeing 707s to China, and more recently sold Beijing, three 747 wide-body and long-range airliners.

It is recognized that the question of arms transfer to China has a strategic implication - the triangular relationship between Washington, Moscow and Beijing.

The perplexity of this triangulated relation has intrigued multitudes of academicians and government officials since President Nixon's trip to China in 1972. In 1975, Michael Pillsbury, a Rand analyst, published an article in Foreign Policy magazine of possible U. S. - China military ties. He advanced the idea of a U. S. - China strategic relationship through the transfers of passive and defensive military technology. The advantages to the United States could be threefold, according to Pillsbury. First, the military relationship could be served as "reward" for the "pragmatic Chinese policy," and further Sino-American diplomatic relations. Second, it could stabilize the Sino-Soviet confrontation and forestall a future Sino-Soviet war which could jeopardize world peace. Third, increased

Chinese military capabilities along the Sino-Soviet border could mean tying down additional Soviet military forces that could otherwise be deployed against American allies in the European theaters.[23]

In 1977, Doak Barnett, an old China hand wrote in the Foreign Affairs magazine, that the United States should proceed the Sino-American relations with "caution." Barnett further conceded that the time is not yet mature for transfers of "purely military technology or hardware" to China.[24]

In 1978, Edward Luttwak, a senior fellow at the Georgetown Center for Strategic and International Studies spoke out against the use of the "China Card" - a term that has come to be recognized as the leverage the United States has over the Soviet Union through improvements of the Sino-American relations in the areas of social, political, technological, economic and military. He reasoned that helping China militarily could provoke the Soviet Union into using force against China or other Soviet military scenarios and, therefore, it is "self-defeating." [25]

These different views taken by three distinguished scholars and other opponents and proponents contributed to the formulation of the three schools of thought of the China card by Robert Sutter. They are the "Manipulative School" - American policy toward China does affect the Soviet Union; the "Low Impact School" - Sino-American relations have had and are likely to have little impact

on the Soviets; and the "Nonmanipulative School" - U. S. policy toward China impacts heavily against the Soviet Union, therefore, the United States should anticipate and adjust for the impact on the Soviet Union, and should not try to manipulate the China policy.[26]

In the past, the U. S. policy has been one of evenhandedness and equal distance toward Beijing and Moscow. Until very recently, the United States had stated time and again that it will not sell arms to China. On 4 October 1979, a secret Defense Department study with prospects of positive U. S. military links with China was conveniently leaked to the New York Times. According to the study, the vulnerability of Soviet Central Asia would increase significantly if United States forces were based in China or if China received transfers of modern arms and equipment from the West or increased indigenous production. The study further added that even in a war between China and the Soviet Union, the United States should consider the possibility of military support for China.[27] Although the Defense Department maintained that the report was only the results of a staff study and in no way represents the policy of the Department of Defense or the United States government, it has an added significance when mixed with the announcement of Secretary of Defense Harold Brown's visit to China - first ever by an American Defense Chief since 1949. As Richard Burt wrote

in the New York Times, "The planned visit and the Pentagon report on military options seems to reflect a gradual shift in American policy."[28]

This "gradual shift" took on a traumatic change in the U. S. arms transfer policy toward China after the Soviet invasion of Afghanistan. On 6 January 1980, during his eight-day trip to China, Secretary Brown announced one of the toughest U. S. warnings yet to the Soviet Union. He said that the United States and China may take "complementary" military action if their "shared interests" are threatened.[29] A few days later, Vice Premier Deng Xiaoping demonstrated his anti-Soviet hard liner attitude with an even stronger reply:

> "The Soviet Union is the main source of a turbulent international situation and a threat to peace and security. China and the United States should do something in a down-to-earth way to defend world peace against Soviet hegemonism.[30]

These anti-Soviet inspirations were soon turned into action. On 8 January, the United States took another major step toward an emerging U. S. - China alliance when Secretary Brown announced the sale of a sophisticated Landsat surveillance satellite ground station to China. It shifted the U. S. policy from the strictly civilian sale to that of dual capacity.

Although the main purpose of the ground station was to enable China to assess its harvest prospects, plan its

forest protection, search for oil and gas and manage other natural resources; it probably will enable China to proceed faster in developing its own surveillance satellite and earily warning systems and improving its high speed computers.[31] As Secretary Brown said, "The United States intends to provide China with the advance technology that will speed the development of the whole Chinese economy - and have significant military application as well."[32]

The Pentagon study leak, the sale of the Landsat ground stations and Secretary Brown's visit to China, although it was arranged much earlier, coincided with Soviets actions in Afghanistan. These events unequivocally had a significant impact on the Washington, Moscow and Beijing triangular relations. It appeared the Carter administration had abandoned the policy of evenhandedness in American dealings with China and the Soviet Union.

On 19 March 1980, the U. S. arms transfer policy toward China took a great leap forward when the Carter administration announced it will consider sales of military support equipment to China. This includes equipment such as transport aircraft, helicopters, trucks, radar, advanced communication systems, etc.[33] In a May issue of the Far Eastern Economic Review, it indicated that the United States is currently considering the possibility of selling conventional weapons to China, including cruise missiles.[34]

Whether it is the perceptiveness of the author or if it was "inside" information, the U. S. arms transfer policy has evolved drastically since January 1980. It appeared that it is only a matter of time before lethal defensive-type weaponry will be replaced on the U. S. Munitions List for sale to China.

In May 1980, Geng Biao, Deputy Prime Minister and Secretary General of the Communist Party's Military Affairs Commission, visited the United States on a two week tour. Prior to his departure from Beijing, he indicated that China had not yet made any specific request for American arms. ". . . but we might touch on this during my visit," said Geng. He further said, "I think if there is anything the United States would like to sell to us, we would be glad to buy it, if it is one of those things we are in need of."[35] The Chinese have denoted earlier of their needs as Deng Xiaoping expressed to the U. S. Senate Foreign Relations Committee visiting China in mid-April 1979, that China has interest in both the McDonnell-Douglas F-15 and the F-16 fighter of General Dynamics.[36] Other sources have indicated that China was also interested in buying Lockheed's C-130 Hercules transport, the P-3C Orion ASW patrol aircraft and the A-10 ground attack aircraft.[37] On 29 May 1980, the U. S. government approved export license applications for a wide range of military support equipment to China.

These items included air defense radar, helicopters, communication equipment and computers.[38] In June 1980, U. S. - China relations took another step forward when Richard Holbrooke, Assistant Secretary of State for East Asian and Pacific Affairs, announced that the triangular diplomacy of the early 1970s is no longer an "adequate conceptual framework in which to view relations with China." He further declared that the United States "will develop our relations with China on their own merits."[39] This open declaration indicated a strong growing temptation in the United States to play the "China Card."

It must be expected that the Chinese will buy these and other critical military support equipment promptly and willingly. In order to be a credible "partner" to the United States, the Chinese will further denounce and attack the Soviet hegomonism. To gain further U. S. assistance, the Chinese will try to solicit the United States to play the "China Card." As Mr. Geng urged "our American friends to rest assured that China's relations with the Soviet Union were not likely to improve."[40] He was referring to the nearly one million troops on the Sino-Soviet borders, the Vietnam-Cambodia conflict, and the Soviet invasion of Afghanistan.

E. SUMMARY

Thus far, what had transacted in the newly found Sino-American relations is only a very small part of what the United States is capable of. Whether there will be any further escalations of the U. S. arms transfer policy toward China, it can be assured that this issue will be intensively debated by academicians as well as various agencies within the U. S. government. Numerous direct and indirect variables, causes and effects, pros and cons, will all have to be considered before finally playing the so-called "China Card." The final and main determinant to play the "China Card" will depend on the view taken by the U. S. in analyzing Sino-Soviet policies.

As of mid-1980, it is evident that China will not be able to quickly obtain high technology weapons with lethal implication through the U. S., French and British suppliers. Any speed up in acquisition could only be made possible by some drastic diplomatic development which as yet does not appear to be on the horizon.

FOOTNOTES

1. Edward N. Luttwak, "Against the China," Commentary, Vol. 66, No. 4, October 1978, pp. 41-42; New York Times, 4 October 1979.

2. Angus M. Fraser, "Military Modernization in China," Problems of Communism, September-December 1979, p. 40.

3. Francis J. Romance, Modernization of China's Armed Forces. A paper presented at the Association for Asian Studies annual meeting, 30 March-1 April 1979, Los Angeles, pp. 18-19.

4. Washington Post, 9 January 1980; New York Times, 9 January 1980.

5. Neuman and Harkavey, p. 174.

6. Ibid., p. 182.

7. Lawrence Freedman, "British Foreign Policy to 1985," International Affairs, July 1978, p. 377.

8. Ibid., p. 388. Note: COCOM is a committee made up of NATO allies minus Iceland but including Japan. This committee monitors commercial exports to ensure no military assistance or advanced technology is provided unintentionally. Of all the communist countries, only Yugoslavia is excluded from the list. COCOM recommendations are not binding.

9. JPRS, China Report, 74396, 17 October 1979, p. 77.

10. The Asian Wall Street Journal, 31 March 1980.

11. Freedman, p. 383.

12. The Asian Wall Street Journal, 31 March 1980; Beijing Review No. 14, 7 April 1980, p. 7.

13. Neuman and Harkavy, p. 174.

14. Ibid., p. 179.

15. Edward A. Kolodziej, French Arms Transfer Policy, A presentation to the Arms Transfer Class at the Naval Postgraduate School, 13 March 1980.

16. "China," Financial Times Survey, 20 August 1979, p. IV.

17. James R. Capra and Stephen H. Brooks, Congressional Budget Office, The Effect of Foreign Military Sales on the U. S. Economy (Washington: Government Printing Office, 23 July 1976), p. 1.

18. Neuman and Harkavy, p. 3.

19. Ibid., p. 155.

20. Ibid., p. 156.

21. New York Times, 5 January 1980, p. 1.

22. Chicago Tribune, 11 January 1980.

23. Michael Pillsbury, "U. S. - Chinese Military Ties?" Foreign Policy, Fall 1975, No. 30, pp. 50-64.

24. A. Doak Barnett, "Military Security Relations Between China and the United States," Foreign Affairs, April 1977, pp. 584-597.

25. Edward N. Luttwak, "Against the China Card," Commentary, October 1979, Vol. 66, No. 4, pp. 37-43.

26. U. S., Congress, House, Playing the China Card: Implications for United States-Soviet-Chinese Relations, report by the Subcommittee on Asian and Pacific Affairs, 96th Congress, 1st Session, October 1979, pp. 1-3.

27. New York Times, 4 October 1979 and 4 January 1980.

28. Ibid.

29. Los Angeles Times, 7 January 1980.

30. New York News, 9 January 1980.

31. Baltimore Sun, 9 January 1980.

32. Baltimore Sun, 11 January 1980.

33. Monterey Peninsula Herald, 19 March 1980.

34. Far Eastern Economic Review, 2 May 1980.

35. New York Times, 25 May 1980.

36. JPRS, China Report, 74596, 17 October 1979, p. 78.

37. Ibid.; U. S., Congress, Committee on Foreign Affairs, Chronologies of Major Developments in Selected Areas of Foreign Affairs: January-August 1979, Foreign Affairs Committee Print (Washington: Government Printing Office, 1979), p. 170.

38. Monterey Peninsula Herald, 30 May 1980.

39. San Jose Mercury, 6 June 1980.

40. New York Times, 25 May 1980.

VII. CONCLUSION

The combination of antiquated Chinese military forces, the perception of a growing military threat, and the advent of a new pragmatic administration in China had given the drive for the modernization of national defense as part of the "Four Modernizations" in 1978. However, the attainment of this goal - to build China into a powerful socialist nation by the year 2000 - has been plagued with the results of poor standards of living, a growing but still fragile economy, and enormous but low technological proficient manpower base in both the military and industry, and the lack of willing arms suppliers. These events had caused the Chinese leadership to reassess and to revamp its priorities and goals.

In January 1979, Vice Premier Deng Xiaoping informed Sen. John Glenn during his visit to China that "the defense modernization has a lower priority than the other three modernizations." He further elaborated that the remainder of this century "will be devoted primarily to modernizing ground forces with up-to-date but non-sophisticated equipment."[1] This decline in priority was further corroborated in Vice Chairman Ye Jianying's speech at the meeting celebrating the 30th anniversary of the founding of the People's Republic of China. Ye spoke of the modernization of

agriculture, industry, science and technology, and national defense - in that order (see He's speech in Chapter 1). The real decline in national defense modernization, however, will remain to be seen.

The civilian heavy industry and science and technology has been an integral and vital part of the military defense industry for the past 30 years. It is no coincidence to find that 25 percent of the heavy industry, over 56 percent of defense industry plants, and 50 percent of the research institutes of the Chinese Academy of Science located in the two northeast military regions - Beijing and Shenyang (see Appendix A). Any acceleration in the development of heavy industry and/or science and technology are likely to have a direct or indirect benefit on the modernization of the military defense industry. In essence, military modernization will be the ultimate benefactor of any gains by other modernizations. The decline of the military defense in the four modernizations priorities will probably mean less capital and resources are allocated for direct purchases of foreign arms and equipment but actually more will be devoted for the purchases of high foreign technologies - especially technology for producing weapons.

Under these technology transfers, China will slowly gain its much needed military self sufficiency through the

Moody's building block concept, whereby step-by-step process using the infrastructure and experience acquired at one stage as a building block to move on to the more advanced stage. This process, by which the technology know-how is transferred to construction state then to production capability, will span over a long duration. It usually means the more sophisticated the technology, the longer it will take to assimilate. By the time it has reached the stage of self reliance, the equipment will likely be made obsolescent by further invention or renovation by other powers. This is likely what prompted the Chinese leaders to forego the state-of-the-art technology and rely on the more "up-to-date but non-sophisticated equipment." It can be expected in the next few years that the Chinese will purchase limited modern but unsophisticated critical weapons systems and the accompanied production rights for its indigenous productions.

The shift of priorities in the "Four Modernizations" and the deviation of a set goal of military modernization represented an abandonment of the quick-fix position to a long-term growth solution. These events indicated that the modernization of the military will be long and tedious, and that the Chinese armed forces will not be able to "march in the front ranks of the world" by the end of the century. There is no doubt, however, of the Chinese resolve to modernize the military along with its other priorities,

so eventually, it will approach the status in the world to which it feels it is entitled by other forms of greatness.

FOOTNOTES

1. U. S., Congress, Senate, Committee on Foreign Relations, Sino-American Relations: A New Turn, Trip Report, 1979, 96th Congress, 1st Session, Committee Print (Washington: Government Printing Office, 1979), p. 28.

APPENDIX A

Research Institute of the Chinese Academy of Science

Applied Chemistry Institute of Kirin, Changchun *
Archaeology Institute, Beijing *
Astronomical Observatory, Beijing *
Astronomical Observatory, Shanghai
Astronomical Observatory, Purple Mountain, Nanjing
Atmospheric Physics Institute, Beijing *
Atomic Energy Institute, Beijing *
Automation Energy Institute, Beijing *
Biochemistry Institute, Beijing *
Biophysics Institute, Beijing *
Botany Institute, Beijing *
Botany Institute of Guangdong, Guangdong
Chemical Engineering and Metallurgy Institute, Beijing *
Chemical Physics Institute, Lanzhou
Chemical Physics Institute, Luta
Chemistry Institute, Beijing *
Chemistry Institute, Jinan
Chemistry Institute South Central, Guangdong
Computer Technology Institute, Shanghai
Computer Technology Institute, Shenyang *
Economics Institute, Beijing *
Electrical Engineering Institute, Beijing *
Electron Optics Institute, Shanghai
Engineering Mechanics Institute, Harbin *
Entomology Institute of Guangdong, Guangdong
Entomology Institute, Shanghai
Environmental Chemistry Institute, Beijing *
Experimental Biology Institute, Shanghai
Genetics Institute, Beijing *
Geochemistry Institute, Guiyang
Geography Institute, Beijing *
Geology Institute, Beijing *
Geology Paleontology Institute, Nanjing
Geophysics Institute, Beijing *
Glaciology, Permafrost and Deserts Institute, Lonzhou
High Energy Physics Institute, Beijing *
History Institute No. 1 (Ancient History), Beijing *
History Institute No. 2 (Modern History), Beijing *
Literature Institute, Beijing *
Materia Medica Institute, Shanghai
Mathematics Institute, Beijing *
Mechanics Institute, Beijing *
Metallurgy Institute, Shanghai

APPENDIX A

(continued)

Metrology Institute, Beijing *
Nuclear Physics Institute, Shanghai
Oceanography of the South Seas Institute, Guangdong
Oceanography Institute, Qingdao *
Optics and Precision Instruments Institute, Changchun *
Optics and Precision Instruments Institute, Shanghai
Organic Chemistry Institute, Shanghai
Pedology Institute, Nanjing
Physics Institute, Beijing
Physiology Institute, Shanghai
Plant Physiology Institute, Shanghai
Plateau Atmospheric Physics Institute, Lanzhou
Physiology Institute, Beijing *
Radio Engineering and Electronics Institute, Beijing
Rock Soil Mechanics Institute, Wuhan
Saline Lakes Research Institute, Sining
Scientific and Technical Information Institute, Beijing *
Semiconductors Institute, Beijing *
Silicate Chemistry Technology Institute, Shanghai
Structure of Matter Institute of Fujian, Fujian
Technical Physics Institute, Shanghai
Vertebrate Paleontology and Paleo-Anthropology Institute, Beijing *
Zoology Institute, Beijing *

Source: U. S. Congress, House, Committee on Science and Technology, Science in China and U. S. - China Scientific Exchanges: Assessment and Prospects, Committee Print, 94th Congress, 2nd Session, Washington D. C.: Government Printing Office, 1976.

NOTE: * denotes Research Institutes located in the two northeast military regions of China - Beijing and Shenyang.

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